ORDER NO. HAD8506123C2

# Service Manual

## Stereo Music Centre

## SG-X7

### AM/FM Stereo Radio with Cassette Tape Deck and Record Player

**Color**

(K)...Black Type

| Color | Area |
|---|---|
| (K) | [EX] . . . . Continental Europe |
| (K) | [Ei] . . . . Italy |

## SPECIFICATIONS

### AMPLIFIER SECTION

Power Output ..... MPO: 10WX2(THD 10%, 4Ω)
Output Impedance ..... **4**~**16** Ω
Input sensitivity & Impedance:
Mic ..... **1.5** mV, **1.5** kΩ
Tone Control ..... + **6** dB, − **12** dB at **10** kHz
Loudness Control ..... + **6** dB at **100** Hz
(Volume at − **30** dB position)

### FM TUNER SECTION

Frequency Range ..... **87.5** MHz ~ **108** MHz
Intermediate Frequency (IF) ..... 10.7MHz
Sensitivity ..... **3.8** μV (at 1kHz S/N **26**dB, Mod. **40**kHz)
Image Ratio ..... **35** dB (at **98** MHz)
Signal/Noise Ratio ..... Mono: **65** dB (IHF)
Distortion ..... Mono : **0.3** %
Stereo : **0.5** %
Stereo Separation ..... **35** dB (at 1kHz)

### AM TUNER SECTION

Frequency Range ..... **527** kHz ~ **1605** kHz
Intermediate Frequency (IF) ..... **450** kHz
Sensitivity ..... **200** μV/m(1MHz)

### PHONO SECTION

Turntable System ..... Belt Drive, Automatic Turntable
Turntable Size ..... **28** cm
Turntable Speed ..... 33-1/3 rpm and 45 rpm
Phono Motor ..... DC Servo Motor
Cartridge ..... Ceramic Cartridge (EPC-13STH)
Stylus ..... Sapphire (EPS-41ST)
Stylus Pressure ..... **5.5** g

### TAPE DECK SECTION

Deck System ..... Auto-Stop Cassette System with Pause Control
Track System ..... 4-Track, 2-Channel
Recording System ..... AC Bias (53 kHz)
Erasing System ..... Magnet
Tape Speed ..... 4.75 cm/sec.
Frequency Response ..... **50** Hz ~ **12** kHz
Wow & Flutter ..... **0.2** % (WRMS)
Signal/Noise Ratio ..... **40** dB (A-WTD)

### GENERAL

Power Consumption ..... **30** W
Power Supply ..... AC**220**V, **50**/**60**Hz
Dimensions (W×H×D) ..... **380** mm× **129.5** mm× **408** mm
Weight ..... **3.8** kg

*Specifications are subject to change without notice for further improvement.

Panasonic

**Matsushita Electric Trading Co., Ltd.**
P.O.Box 288, Central Osaka, Japan

SG-X7

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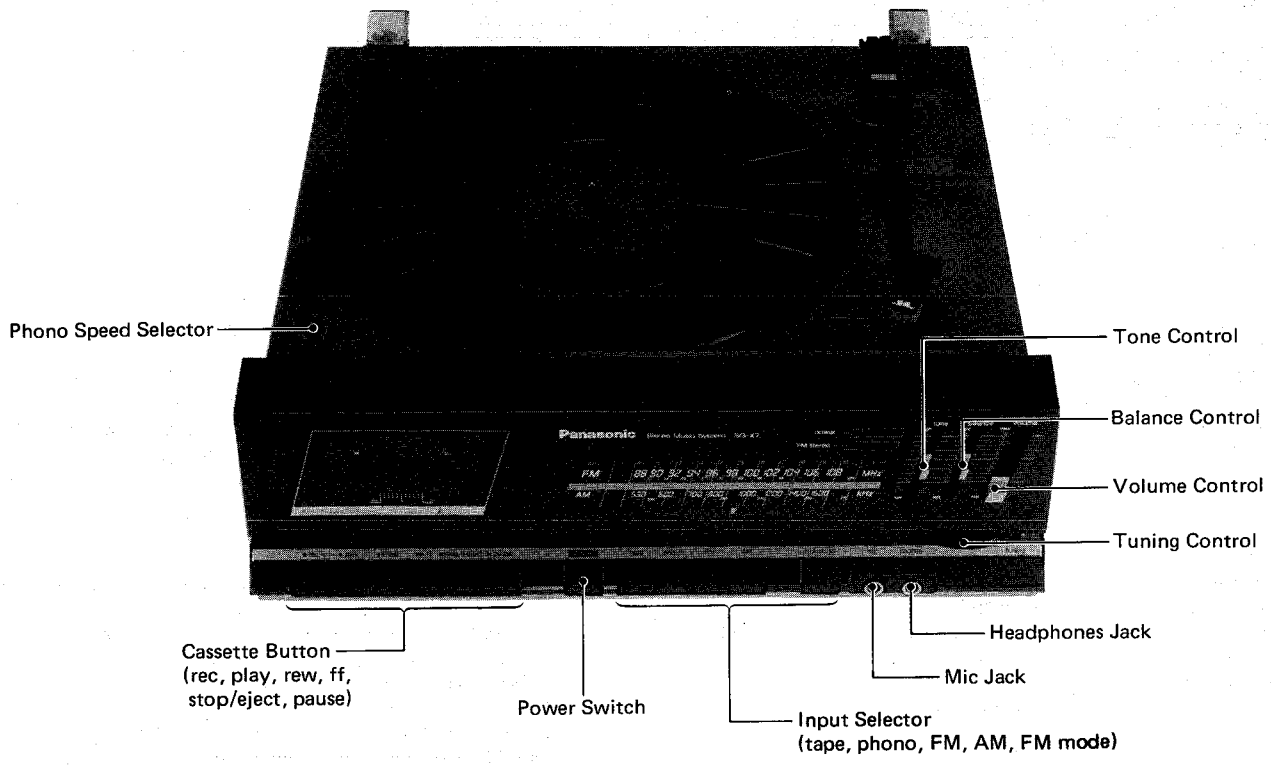
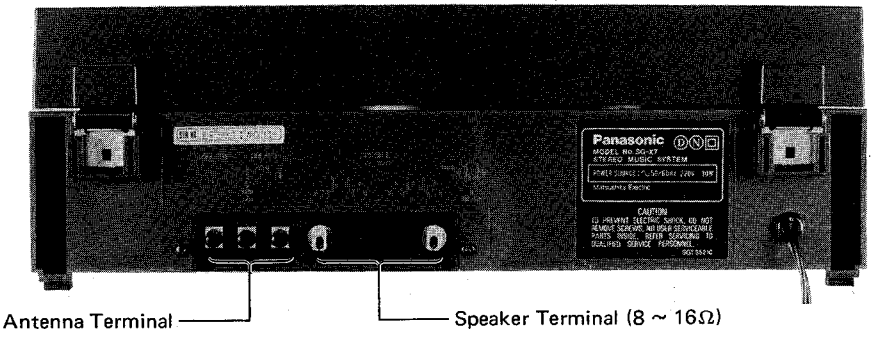
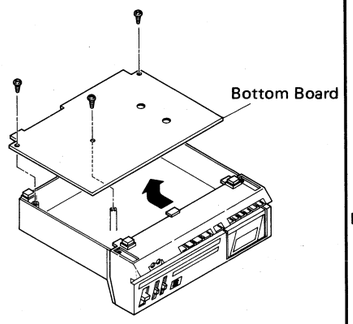
# ■ LOCATION OF CONTROLS



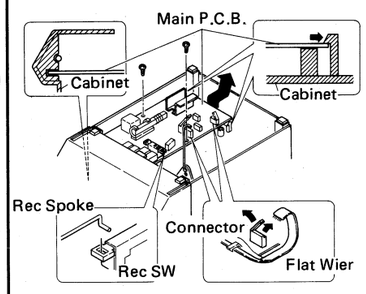



# ■ DISASSEMBLY INSTRUCTIONS

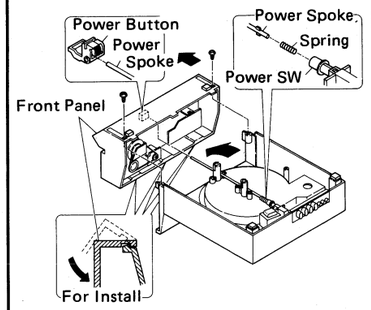
### ❶ Remove the Bottom Board



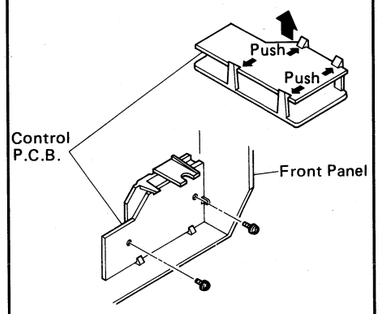

### ❷ Remove the Main P.C.B.



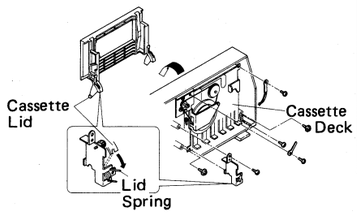

### ❸ Remove the Front Panel



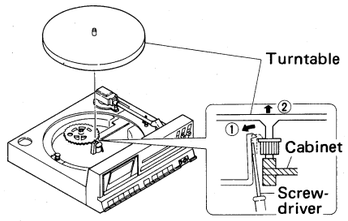

### ❹ Remove the Control P.C.B.



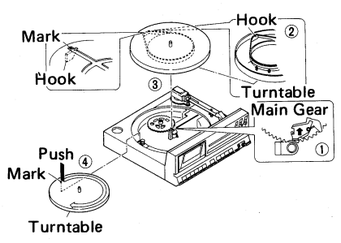

### ❺ Remove the Cassette Deck and Lid



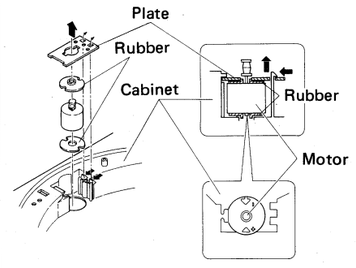

### ❻ Remove the Turntable



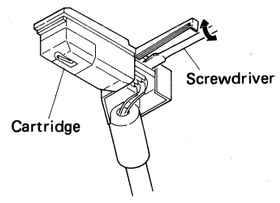

### ❼ Install the Turntable



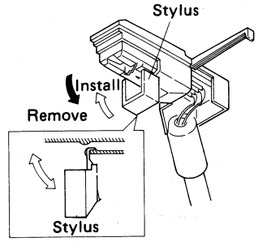

### ❽ Remove the Phono Motor




### ❾ Remove the Cartridge




### ❿ Remove the Stylus




- **Replace the Parts on P.C.B.**
  - **Main P.C.B.** . . . . . Refer to ❶, ❷
  - **Control P.C.B.** . . . . . Refer to ❶~❹
- **To Remove the Front Panel** . . . . . Refer to ❶~❸
- **To Remove the Cassette Deck and Lid** . . . Refer to ❶~❸, ❺
- **To Remove the Turntable** . . . . . Refer to ❶, ❻
- **For Install the Turntable** . . . . . Refer to ❼
- **To Remove the Phono Motor** . . . . . Refer to ❶, ❻, ❽
- **To Remove the Cartridge** . . . . . Refer to ❾
- **To Remove the Stylus** . . . . . Refer to ❿



# ■ MEASUREMENTS AND ADJUSTMENTS

● Radio

**Control Positions**

- Volume Control ····· Maximum
- Tone Control ····· Center
- Balance Control ····· Center
- Output of signal generator should be no higher than necessary to obtain output reading.
  Make certain that speaker system is connected to the receiver when adjusting (or use relivant dummy load resistors).

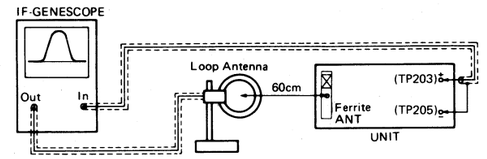
**Test Equipments**

- IF-Genescope
- Loop Antenna
- AM Signal Generator
- DC Voltmeter
- AC Voltmeter
- Oscilloscope
- FM Signal Generator
- FM Dummy Antenna (75Ω Unbalanced)
- Frequency Counter
- FM Stereo Signal Generator
- Distortion Meter

### AM-IF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Place unit into AM position.
3. Place the radio dial setting to point of noninterference.
4. Adjust **T203** for maximum output and symmetrical curve.

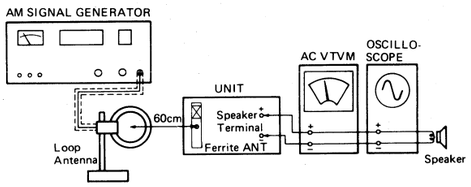
GENESCOPE CONDITION
Frequency . . . . . 450 kHz




### AM-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Place unit into AM position.
3. Place the radio dial and signal generator setting to **510 kHz. (Set the dial pointer to the left end of the scale or lower frequency edge.)**
4. Adjust **L203** for maximum output.
5. Place the radio dial and signal generator setting to **600 kHz.**
6. Adjust **L202** for maximum output.
7. Place the radio dial and signal generator setting to **1670 kHz. (Set the dial pointer to the right end of the scale or upper frequency edge.)**
8. Adjust **CT204** and **CT203** for maximum output.
9. Repeat steps 3. ~ 8.

AM SIGNAL GENERATOR CONDITION
Modulation . . . . . 30%
Modulation Frequency . . . . . 400 Hz

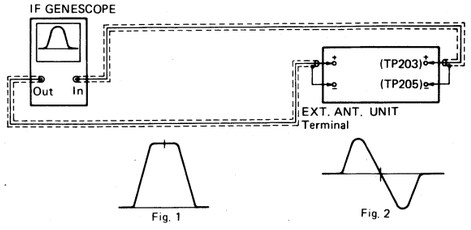



### FM-IF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Place unit into FM position.
3. Place the radio dial setting to point of noninterference.
4. Adjust **T201** for maximum amplitude and symmetrical curve. (Refer to Fig. 1)
5. Adjust **T202** for maximum amplitude and proper linearity between about ±100kHz markers. (Refer to Fig. 2)

Note: Before adjusting, turn the corest of **T202** fully counterclockwise.

GENESCOPE CONDITION
Frequency . . . . . 10.7 MHz

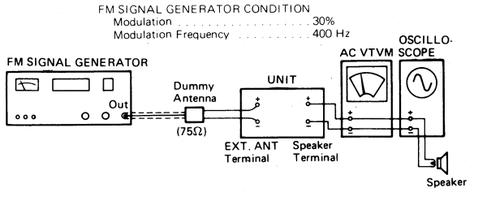



### FM-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Place unit into FM position.
3. Place the radio dial and signal generator setting to **87.25 MHz. (Set the dial pointer to the left end of the scale or lower frequency edge.)**
4. Adjust **L205** and **L204** for maximum output.
5. Place the radio dial and signal generator setting to **108.40 MHz. (Set the dial pointer to the right end of the scale or upper frequency edge.)**
6. Adjust **CT202** and **CT201** for maximum output.
7. Repeat steps 3. ~ 6.

Note: As three output reading will be present, adjustments must be made at center frequency.

FM SIGNAL GENERATOR CONDITION
Modulation . . . . . 30%
Modulation Frequency . . . . . 400 Hz

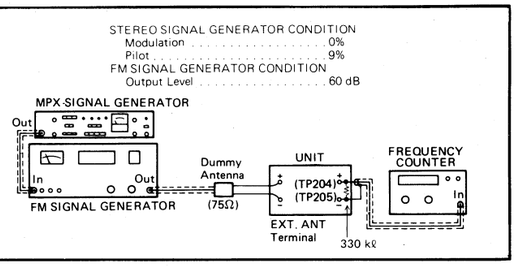


# ■ MEASUREMENTS AND ADJUSTMENTS

● Radio

**FM STEREO ADJUSTMENT (FREE RUN)**

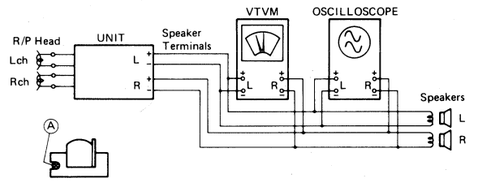
1. Test equipment connection is shown in figure.
2. Place unit into FM AUTO position.
   (By FM mode select button)
3. Place the radio dial and signal generator setting to **98 MHz.**
4. Adjust **VR201** for **38 kHz ± 100 Hz** on frequency counter reading.
5. Tune a stereo broadcast and confirm the frequency stays at **38** kHz.




● Tape

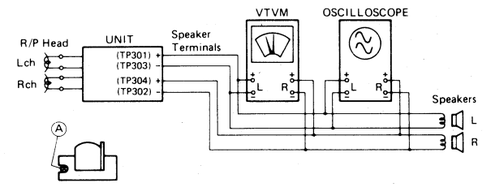
**HEAD AZIMUTH ADJUSTMENT**

1. Test equipment connection is shown in figure.
2. Playback test tape QZZCAC. (10kHz, −20dB)
3. Adjust screw Ⓐ for maximum indication for equal output on both channels.
4. After adjustment, lock the head adjust screw A with lacquer



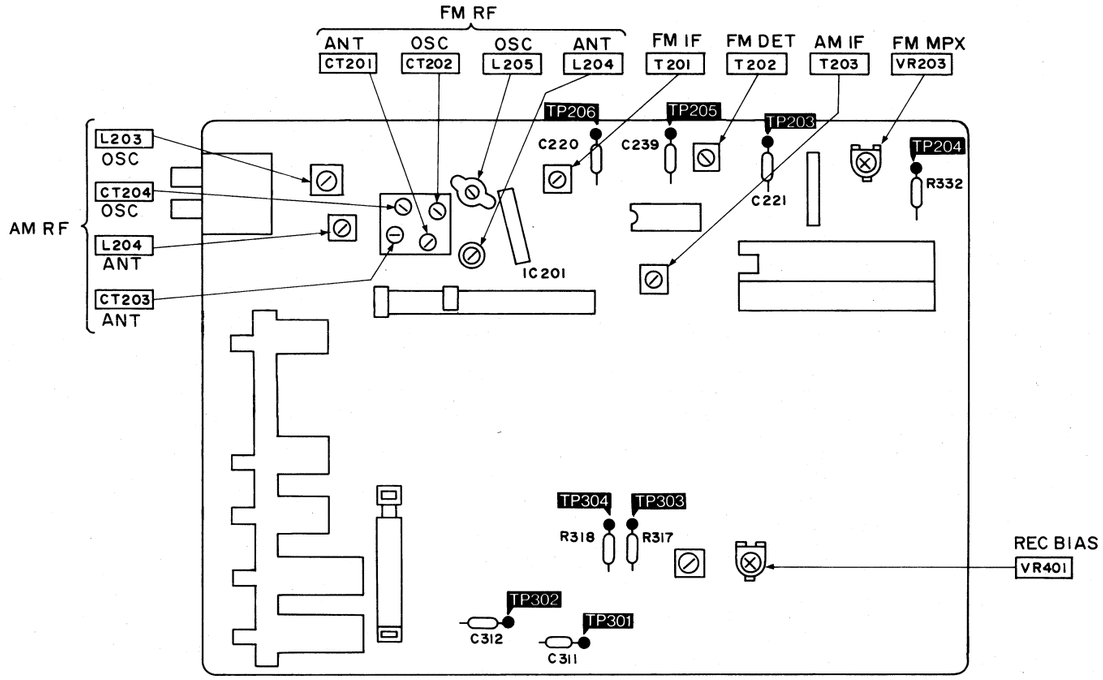

**RECORDING BIAS ADJUSTMENT**

1. Test equipment connection is shown in figure.
2. Place unit into TAPE position.
3. Place cassette deck into recording mode.
4. Adjust **VR401** for **4.1 mV ± 0.3 mV** indication on VTVM.



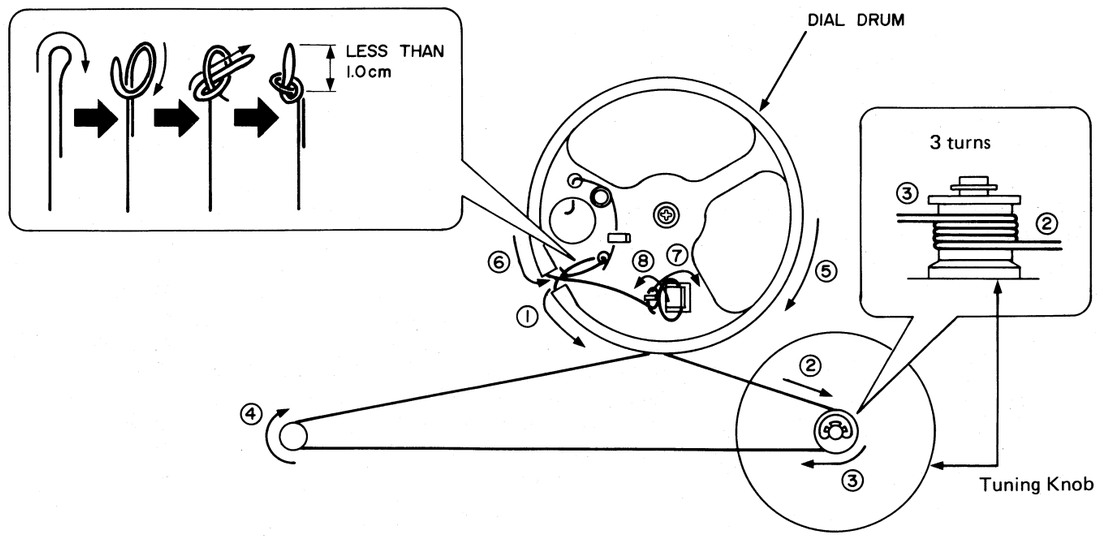



# ■ ADJUSTMENT POINTS




# ■ DIAL CORD STRINGING GUIDE

Note:
Dial Drum ·····Turn Fully Counterclockwise
Dial Cord Loop Length ···**100** cm



# ■ REPLACEMENT PARTS LIST

**Notes :**

1. Parts No. listed in this Parts List are Service Parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ marke have special characteristics important fo safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.

## ● RESISTOR PARTS

**Numbering System of Resister**

| Type | Wattage | Tolerance | Value |
|---|---|---|---|
| Three Letters | One or Two Letters | Two or Three Letters | Three or Four Letters |

Example: ERD 25 TJ 101

| Resistor Type | Wattage | Tolerance |
|---|---|---|
| ERD: Carbon Film<br>ERC: Solid<br>ERX: Metal Film<br>ERG: Metal Oxide Film<br>ERO: High Stability Metal Film<br>ERF: Flaneproof Wire-Wound Bath-Tube<br>ERQ: Fuse Type Metal Film<br>RRD: Chip | 1: 1W<br>2: 2W<br>12: 1/2W<br>18: 1/8W<br>25: 1/4W<br>50: 1/2W<br>2F: 1/4W<br>S1: 1/2W<br>S2: 1/4W | F: ±1%<br>J: ±5%<br>K: ±10% |

| Ref. No. | | Part No. | Value (Ω) |
|---|---|---|---|
| R202 | S | ERD25TJ104 | 100K |
| R203 | S | ERD25FJ331 | 330 |
| R204 | S | ERD25FJ152 | 1.5K |
| R205 | S | ERD25TJ473 | 47K |
| R206 | S | ERD25FJ470 | 47 |
| R207 | S | ERD25FJ102 | 1K |
| R208 | S | ERD25FJ221 | 220 |
| R209 | S | ERD25TJ224 | 220K |
| R210 | S | ERD25FJ152 | 1.5K |
| R211 | S | ERD25FJ331 | 330 |
| R212 | S | ERD25FJ272 | 2.7K |
| R213 | S | ERD25FJ562 | 5.6K |
| R214 | S | ERD25FJ222 | 2.2K |
| R215 | S | ERD25TJ474 | 470K |
| R217 | S | ERD25FJ103 | 10K |
| R218 | S | ERD25TJ224 | 220K |
| R219 | S | ERD25FJ332 | 3.3K |
| R220 | S | ERD25FJ332 | 3.3K |
| R221 | S | ERD25TJ823 | 82K |
| R222 | S | ERD25TJ823 | 82K |
| R223 | S | ERD25FJ472 | 4.7K |
| R224 | S | ERD25FJ472 | 4.7K |
| R225 | S | ERD25FJ561 | 560 |
| R226 | S | ERD25FJ471 | 470 |
| R227 | S | ERD25TJ473 | 47K |
| R228 | S | ERD25FJ271 | 270 |
| R229 | S | ERD25FJ222 | 2.2K |
| R230 | S | ERD25FJ222 | 2.2K |
| R231 | S | ERD25FJ682 | 6.8K |
| R232 | S | ERD25FJ560 | 56 |
| R233 | S | ERD25FJ270 | 27 |
| R234 | S | ERD25FJ102 | 1K |
| R301 | S | ERD25TJ274 | 270K |
| R302 | S | ERD25TJ274 | 270K |
| R303 | S | ERD25FJ101 | 100 |
| R304 | S | ERD25FJ101 | 100 |
| R305 | S | ERD25TJ155 | 1.5M |
| R306 | S | ERD25TJ155 | 1.5M |
| R307 | S | ERD25TJ153 | 15K |
| R308 | S | ERD25TJ153 | 15K |

| Ref. No. | | Part No. | Value (Ω) |
|---|---|---|---|
| R309 | S | ERD25FJ330 | 33 |
| R310 | S | ERD25FJ330 | 33 |
| R311 | S | ERD25FJ561 | 560 |
| R312 | S | ERD25FJ561 | 560 |
| R313 | S | ERD25TJ474 | 470K |
| R314 | S | ERD25TJ474 | 470K |
| R315 | S | ERD25TJ183 | 18K |
| R316 | S | ERD25TJ183 | 18K |
| R317 | S | ERD25FJ100 | 10 |
| R318 | S | ERD25FJ100 | 10 |
| R319 | S | ERD25FJ561 | 560 |
| R320 | S | ERD25FJ561 | 560 |
| R321 | S | ERD25FJ472 | 4.7K |
| R322 | S | ERD25FJ472 | 4.7K |
| R323 | S | ERD25TJ104 | 100K |
| R401 | S | ERD25FJ470 | 47 |
| R403 | S | ERD25FJ100 | 10 |
| R404 | S | ERD25FJ120 | 12 |
| R406 | S | ERD25FJ472 | 4.7K |
| R407 | S | ERD25FJ101 | 100 |
| R408 | S | ERD25FJ4R7 | 4.7 |
| R409 | S | ERD25FJ332 | 3.3K |
| R410 | S | ERD25FJ472 | 4.7K |
| R501 | S | ERD25FJ102 | 1K |
| R502 | S | ERD25FJ102 | 1K |
| R503 | S | ERD25TJ104 | 100K |
| R504 | S | ERD25TJ104 | 100K |
| R505 | S | ERD25TJ153 | 15K |
| R506 | S | ERD25TJ153 | 15K |
| R507 | S | ERD25TJ104 | 100K |
| R508 | S | ERD25TJ104 | 100K |
| R509 | S | ERD25FJ561 | 560 |
| R510 | S | ERD25FJ561 | 560 |
| R511 | S | ERD25TJ273 | 27K |
| R512 | S | ERD25TJ273 | 27K |
| R515 | S | ERD25TJ684 | 680K |
| R516 | S | ERD25TJ684 | 680K |
| R517 | S | ERD25FJ272 | 2.7K |
| R518 | S | ERD25FJ272 | 2.7K |
| R519 | S | ERD25FJ151 | 150 |

| Ref. No. | | Part No. | Value (Ω) |
|---|---|---|---|
| R520 | S | ERD25FJ472 | 4.7K |
| R521 | S | ERD25FJ472 | 4.7K |
| R522 | S | ERD25FJ102 | 1K |
| R523 | S | ERD25FJ103 | 10K |
| R525 | S | ERD25FJ102 | 1K |
| R526 | S | ERD25FJ102 | 1K |
| R527 | S | ERD25FJ152 | 1.5K |
| R528 | S | ERD25FJ102 | 1K |
| R529 | S | ERD25TJ155 | 1.5M |
| R530 | S | ERD25FJ330 | 33 |
| R531 | S | ERD25FJ472 | 4.7K |
| R532 | S | ERD25FJ222 | 2.2K |
| R601 | S | ERD25TJ473 | 47K |
| R602 | S | ERD25TJ473 | 47K |
| R603 | S | ERD25TJ153 | 15K |
| R604 | S | ERD25TJ153 | 15K |
| R605 | S | ERD25TJ153 | 15K |
| R606 | S | ERD25TJ153 | 15K |
| R607 | S | ERD25FJ152 | 1.5K |
| R608 | S | ERD25FJ152 | 1.5K |
| R609 | S | ERD25FJ271 | 270 |
| R610 | S | ERD25FJ271 | 270 |
| R702 | S | ERD25FJ681 | 680 |
| R703 | S | ERD25FJ221 | 220 |
| R704 | S | ERD25FJ331 | 330 |
| R705 | S | ERD25FJ681 | 680 |
| R901 | S | ERD25FJ152 | 1.5K |
| R902 | S | ERD25FJ472 | 4.7K |
| R903 | S | ERD25FJ561 | 560 |
| R904 | S | ERD25FJ561 | 560 |



# ■ REPLACEMENT PARTS LIST

## ● CAPACITOR PARTS

**Numbering System of Capacitor**

| Type | Voltage | Value | Tolerance |
|---|---|---|---|
| Four Letters | One or Two Letters | Two or Five Letters | One or Two Letters |

Example: ECKD 1H 333 MD

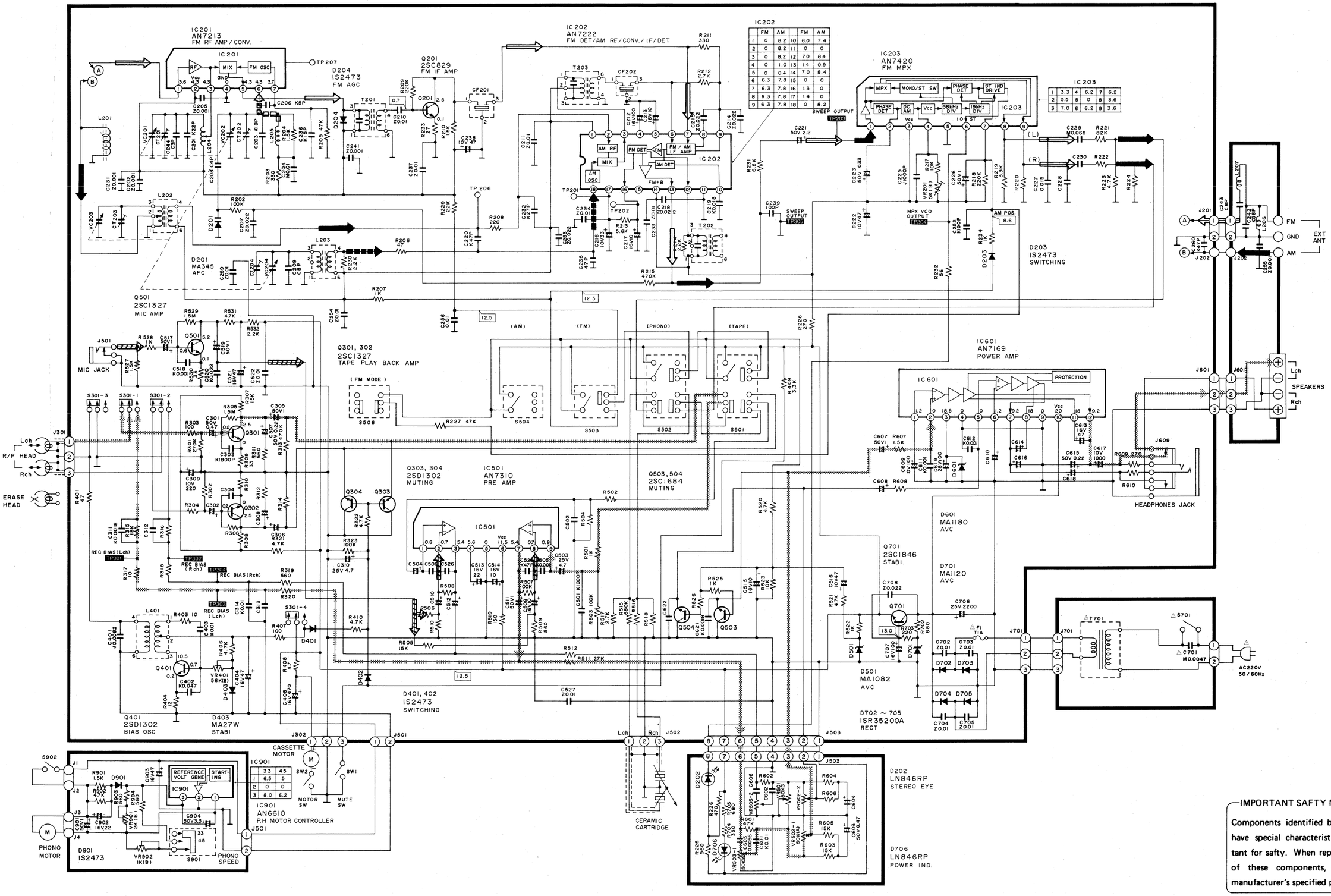
| Capacitor Type | Voltage | Tolerance |
|---|---|---|
| ECCD: Temperature Compensating Ceramic<br>ECKD: High dielectric Constant Ceramic<br>ECQM: Polyester<br>ECQP: Polypropylene Film<br>ECQS: Polystylene Film<br>ECFD: Semiconductor Ceramic<br>ECEA: Electrolytic<br>ECEB: Electrolytic<br>ECET: Electrolytic<br>ECSF: Tantalum<br>ECUX: Chip<br>ECBS: Ceramic<br>ECBT: Ceramic | KC: 400V<br>OJ: 6.3V<br>1A: 10V<br>1C: 16V<br>1E: 25V<br>1V: 35V<br>1H: 50V<br>1J: 63V<br>2A: 100V<br>25: 25V<br>50: 50V | C: ±0.25pF<br>D: ±0.5pF<br>F: ±1pF<br>J: ±5%<br>K: ±10%<br>M: ±20%<br>P: +100,−0%<br>Z: +80,−20% |

| Ref. No. | | Part No. | Value (μF) |
|---|---|---|---|
| C201 | S | ECCD1H220K | 22PF |
| C202 | S | ECKD1H102ZF | 0.001 |
| C203 | S | ECCD1H180KC | 18PF |
| C204 | S | ECKD1H103MD | 0.01 |
| C205 | S | ECKD1H102ZF | 0.001 |
| C206 | S | ECCD1H050CC | 5PF |
| C207 | S | ECKD1H223ZF | 0.022 |
| C208 | S | ECCD1H040CC | 4PF |
| C209 | S | ECCD1H040CC | 4PF |
| C210 | S | ECKD1H103ZF | 0.01 |
| C211 | S | ECKD1H103ZF | 0.01 |
| C212 | | ECEA0JU101 | 100 |
| C213 | | ECEA1CU100 | 10 |
| C214 | S | ECKD1H223ZF | 0.022 |
| C215 | S | ECKD1H223ZF | 0.022 |
| C216 | | ECEA1AU330 | 33 |
| C217 | | ECEA1CU100 | 10 |
| C218 | S | ECKD1H223ZF | 0.022 |
| C219 | | ECFD1E183KD | 0.018 |
| C220 | S | ECCD1H470K | 47PF |
| C221 | | ECEA1HU2R2 | 2.2 |
| C222 | | ECEA1AU470 | 47 |
| C223 | | ECEA1HUR33 | 0.33 |
| C225 | | ECQP2A102JZ | 0.001 |
| C226 | | ECEA1HU010 | 1 |
| C227 | | ECFD1E153KD | 0.015 |
| C228 | | ECFD1E153KD | 0.015 |
| C228 | | ECFD1E223KD | 0.022 |
| C229 | | ECFD1E683KD | 0.068 |
| C230 | | ECFD1E683KD | 0.068 |
| C231 | S | ECKD1H102ZF | 0.001 |
| C232 | S | ECCD1H270K | 27PF |
| C233 | S | ECKD1H103ZF | 0.01 |
| C234 | S | ECKD1H103ZF | 0.01 |
| C235 | S | ECCD1H470K | 47PF |
| C236 | S | ECCD1H150KC | 15PF |
| C237 | S | ECKD1H103ZF | 0.01 |
| C238 | | ECEA1AU470 | 47 |
| C239 | S | ECCD1H101K | 100PF |
| C241 | S | ECKD1H102ZF | 0.001 |
| C242 | S | ECCD1H560K | 56PF |
| C243 | S | ECCD1H080CC | 8PF |
| C244 | S | ECCD1H030CC | 3PF |
| C252 | S | ECCD1H101K | 100PF |
| C253 | S | ECKD1H223ZF | 0.022 |
| C254 | S | ECKD1H103ZF | 0.01 |
| C255 | S | ECKD1H102ZF | 0.001 |

| Ref. No. | | Part No. | Value (μF) |
|---|---|---|---|
| C256 | S | ECKD1H103ZF | 0.01 |
| C259 | S | ECKD1H103ZF | 0.01 |
| C260 | S | ECCD1H470K | 47PF |
| C301 | S | ECEA50ZR47 | 0.47 |
| C302 | S | ECEA50ZR47 | 0.47 |
| C303 | | ECFD1E182KD | 0.0018 |
| C304 | | ECFD1E182KD | 0.0018 |
| C305 | | ECEA1HU010 | 1 |
| C306 | | ECEA1HU010 | 1 |
| C307 | | ECEA1HUR22 | 0.22 |
| C308 | | ECEA1HUR22 | 0.22 |
| C309 | | ECEA1AU221 | 220 |
| C310 | | ECEA1EU4R7 | 4.7 |
| C311 | S | ECKD1H182KB | 0.0018 |
| C312 | S | ECKD1H182KB | 0.0018 |
| C313 | | ECFD1E103KD | 0.01 |
| C314 | | ECFD1E103KD | 0.01 |
| C401 | S | ECQM1H822JZ | 0.0082 |
| C402 | | ECFD1E473KD | 0.047 |
| C403 | | ECFD1E103KD | 0.01 |
| C404 | | ECEA1CU470 | 47 |
| C405 | | ECEA1CU471 | 470 |
| C501 | S | ECKD1H102KB | 0.001 |
| C502 | S | ECKD1H102KB | 0.001 |
| C503 | | ECEA1EU4R7 | 4.7 |
| C504 | | ECEA1EU4R7 | 4.7 |
| C505 | S | ECKD1H102KB | 0.001 |
| C506 | S | ECKD1H102KB | 0.001 |
| C509 | | ECEA1CU100 | 10 |
| C510 | | ECEA1CU100 | 10 |
| C511 | | ECEA1HU010 | 1 |
| C512 | | ECEA1HU010 | 1 |
| C513 | | ECEA1CU220 | 22 |
| C514 | | ECEA1CU101 | 10 |
| C515 | | ECEA1CU100 | 10 |
| C516 | | ECEA1AU470 | 47 |
| C517 | | ECEA1HU010 | 1 |
| C518 | S | ECKD1H102KB | 0.001 |
| C519 | | ECEA1HU010 | 1 |
| C520 | | ECFD1E223KD | 0.022 |
| C521 | | ECEA1CU470 | 47 |
| C522 | S | ECKD1H103ZF | 0.01 |
| C525 | S | ECCD1H470K | 47PF |
| C526 | S | ECCD1H470K | 47PF |
| C527 | S | ECKD1H103ZF | 0.01 |
| C601 | | ECFD1E103KD | 0.01 |
| C602 | | ECFD1E103KD | 0.01 |

| Ref. No. | | Part No. | Value (μF) |
|---|---|---|---|
| C603 | | ECEA1HUR47 | 0.47 |
| C604 | | ECEA1HUR47 | 0.47 |
| C605 | | ECFD1E562KD | 0.0056 |
| C606 | | ECFD1E562KD | 0.0056 |
| C607 | | ECEA1HU010 | 1 |
| C608 | | ECEA1HU010 | 1 |
| C609 | | ECEA1AU101 | 100 |
| C610 | | ECEA1AU101 | 100 |
| C611 | S | ECKD1H102KB | 0.001 |
| C612 | S | ECKD1H102KB | 0.001 |
| C613 | | ECEA1CU470 | 47 |
| C614 | | ECEA1CU470 | 47 |
| C615 | | ECEA1HUR22 | 0.22 |
| C616 | | ECEA1HUR22 | 0.22 |
| C617 | | ECEA1AU102 | 1000 |
| C618 | | ECEA1AU102 | 1000 |
| C619 | | ECEA1EU101 | 100 |
| C621 | | ECFD1E182KD | 0.0018 |
| C622 | | ECFD1E182KD | 0.0018 |
| C701 | ⚠ | ECKDKC472MF2 | 0.0047 |
| C702 | S | ECKD1H103ZF | 0.01 |
| C703 | S | ECKD1H103ZF | 0.01 |
| C704 | S | ECKD1H103ZF | 0.01 |
| C705 | S | ECKD1H103ZF | 0.01 |
| C706 | | ECEA1EU222 | 2200 |
| C707 | | ECEA1CU101 | 10 |
| C708 | S | ECKD1H223ZF | 0.022 |
| C901 | | ECEA1HU010 | 1 |
| C902 | | ECEA1CU220 | 22 |
| C903 | | ECEA1CU470 | 47 |
| C904 | | ECEA1HU3R3 | 3.3 |

# ■ SCHEMATIC DIAGRAM




IC202

| | FM | AM | | FM | AM |
|---|---|---|---|---|---|
| 1 | 0 | 8.2 | 10 | 6.0 | 7.4 |
| 2 | 0 | 8.2 | 11 | 0 | 0 |
| 3 | 0 | 8.2 | 12 | 7.0 | 8.4 |
| 4 | 0 | 1.0 | 13 | 1.4 | 0.9 |
| 5 | 0 | 0.4 | 14 | 7.0 | 8.4 |
| 6 | 6.3 | 7.8 | 15 | 0 | 0 |
| 7 | 6.3 | 7.8 | 16 | 1.3 | 0 |
| 8 | 6.3 | 7.8 | 17 | 1.4 | 0 |
| 9 | 6.3 | 7.8 | 18 | 0 | 8.2 |

IC203

| | | | | | |
|---|---|---|---|---|---|
| 1 | 3.3 | 4 | 6.2 | 7 | 6.2 |
| 2 | 5.5 | 5 | 0 | 8 | 3.6 |
| 3 | 7.0 | 6 | 6.2 | 9 | 3.6 |

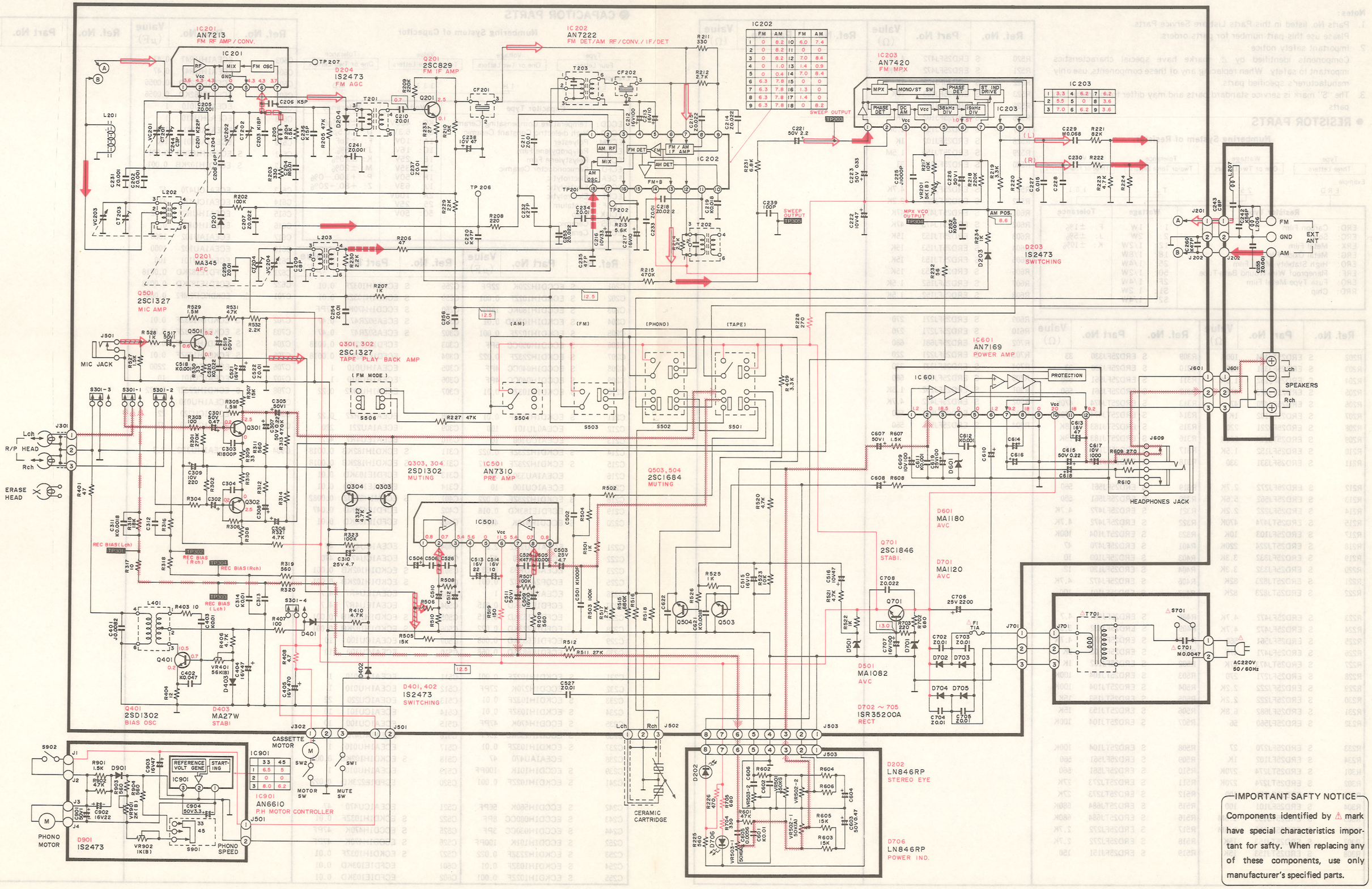
IC901

| | 33 | 45 |
|---|---|---|
| 1 | 6.5 | 5 |
| 2 | 0 | 0 |
| 3 | 8.0 | 6.2 |

**IMPORTANT SAFTY NOTICE**

Components identified by ⚠ mark have special characteristics important for safty. When replacing any of these components, use only manufacturer's specified parts.

# ■ SCHEMATIC DIAGRAM




IC202

| | FM | AM | | FM | AM |
|---|---|---|---|---|---|
| 1 | 0 | 8.2 | 10 | 6.0 | 7.4 |
| 2 | 0 | 8.2 | 11 | 0 | 0 |
| 3 | 0 | 8.2 | 12 | 7.0 | 8.4 |
| 4 | 0 | 1.0 | 13 | 1.4 | 0.9 |
| 5 | 0 | 0.4 | 14 | 7.0 | 8.4 |
| 6 | 6.3 | 7.8 | 15 | 0 | 0 |
| 7 | 6.3 | 7.8 | 16 | 1.3 | 0 |
| 8 | 6.3 | 7.8 | 17 | 1.4 | 0 |
| 9 | 6.3 | 7.8 | 18 | 0 | 8.2 |

IC203

| | | | | | |
|---|---|---|---|---|---|
| 1 | 3.3 | 4 | 6.2 | 7 | 6.2 |
| 2 | 5.5 | 5 | 0 | 8 | 3.6 |
| 3 | 7.0 | 6 | 6.2 | 9 | 3.6 |

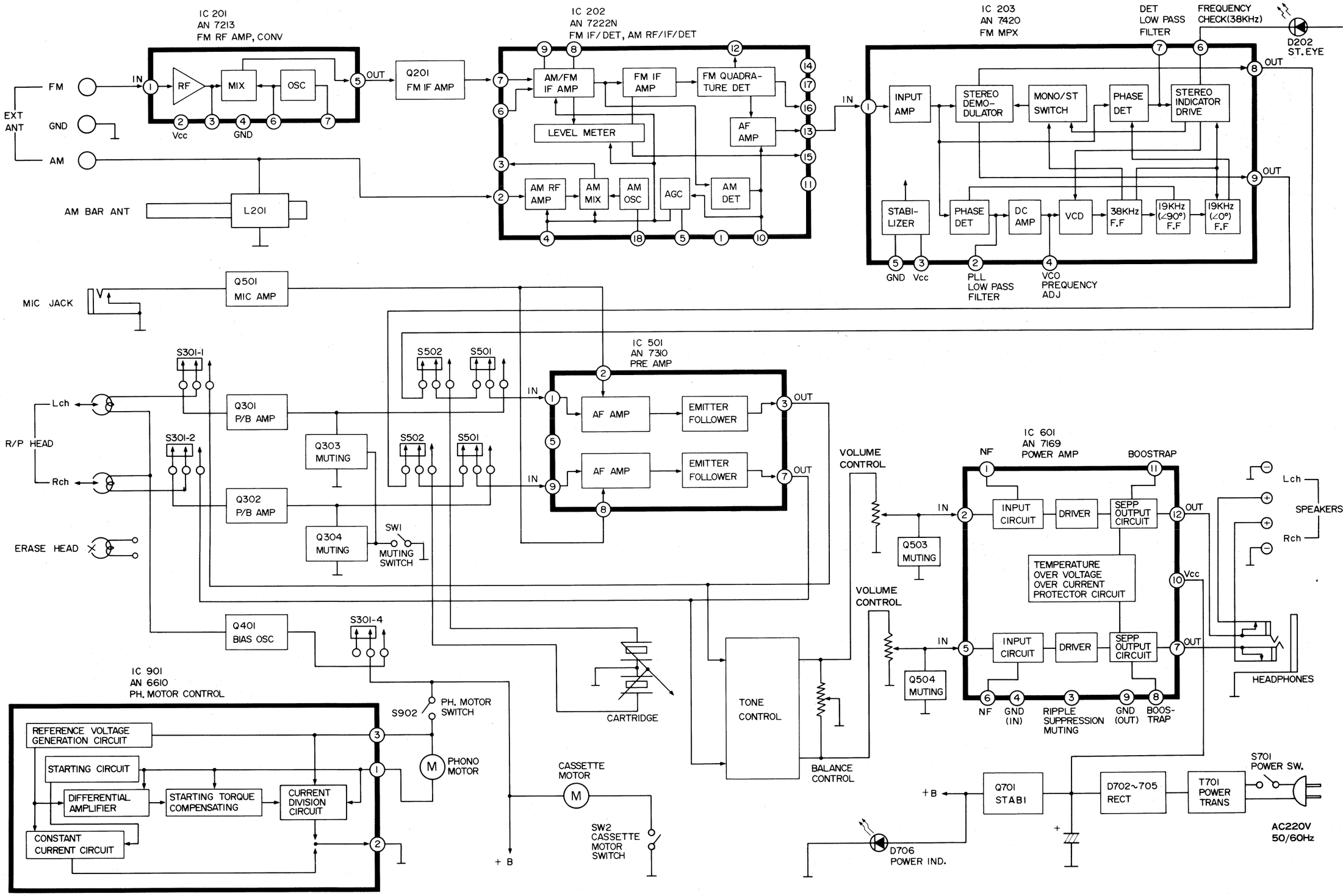
IC901

| | | | |
|---|---|---|---|
| | 33 | 45 | |
| 1 | 6.5 | 5 | |
| 2 | 0 | 0 | |
| 3 | 8.0 | 6.2 | |

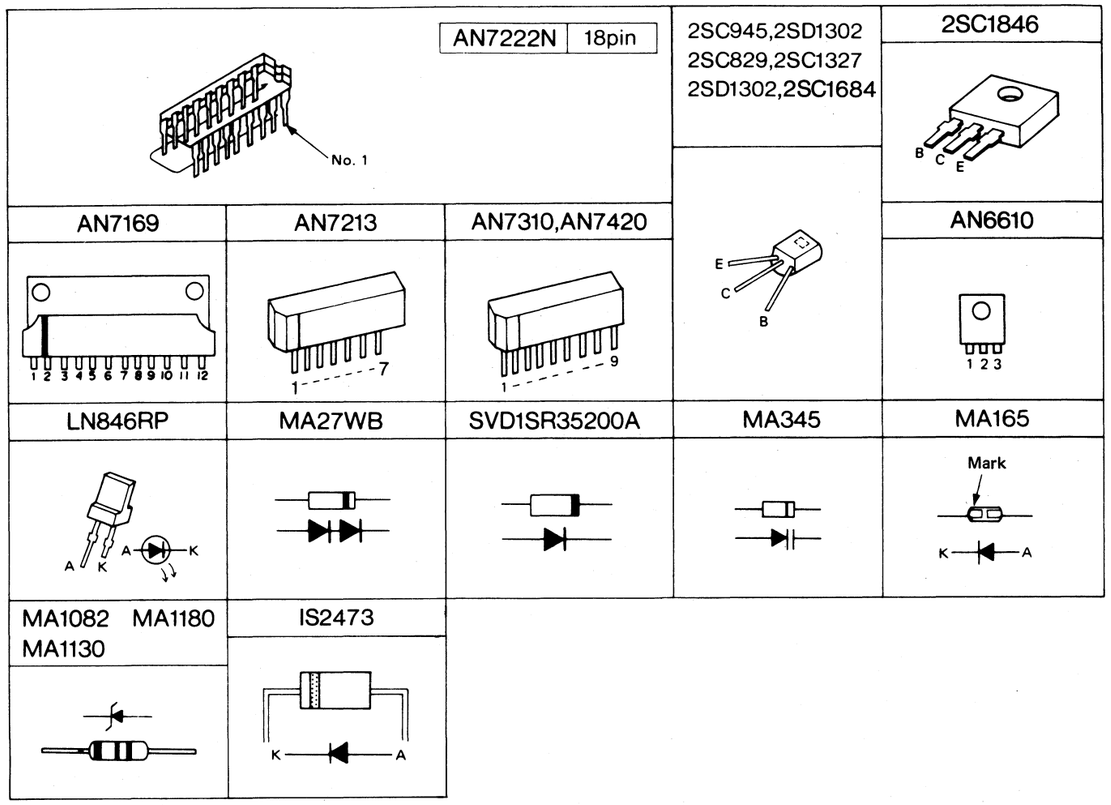
**IMPORTANT SAFTY NOTICE**

Components identified by ⚠ mark have special characteristics important for safty. When replacing any of these components, use only manufacturer's specified parts.

# ■ BLOCK DIAGRAM



## ■ TERMINAL GUIDE

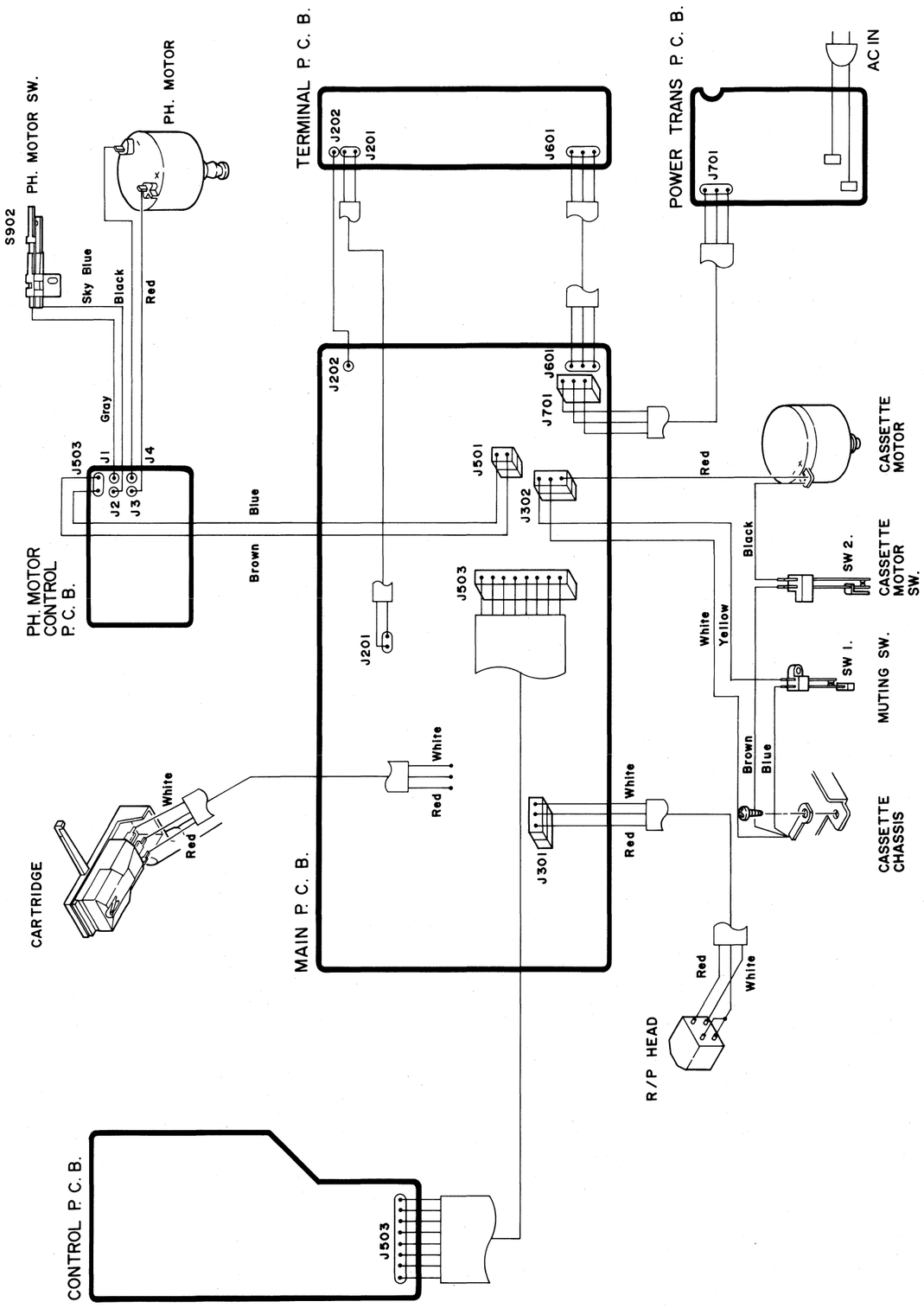



**Notes:**

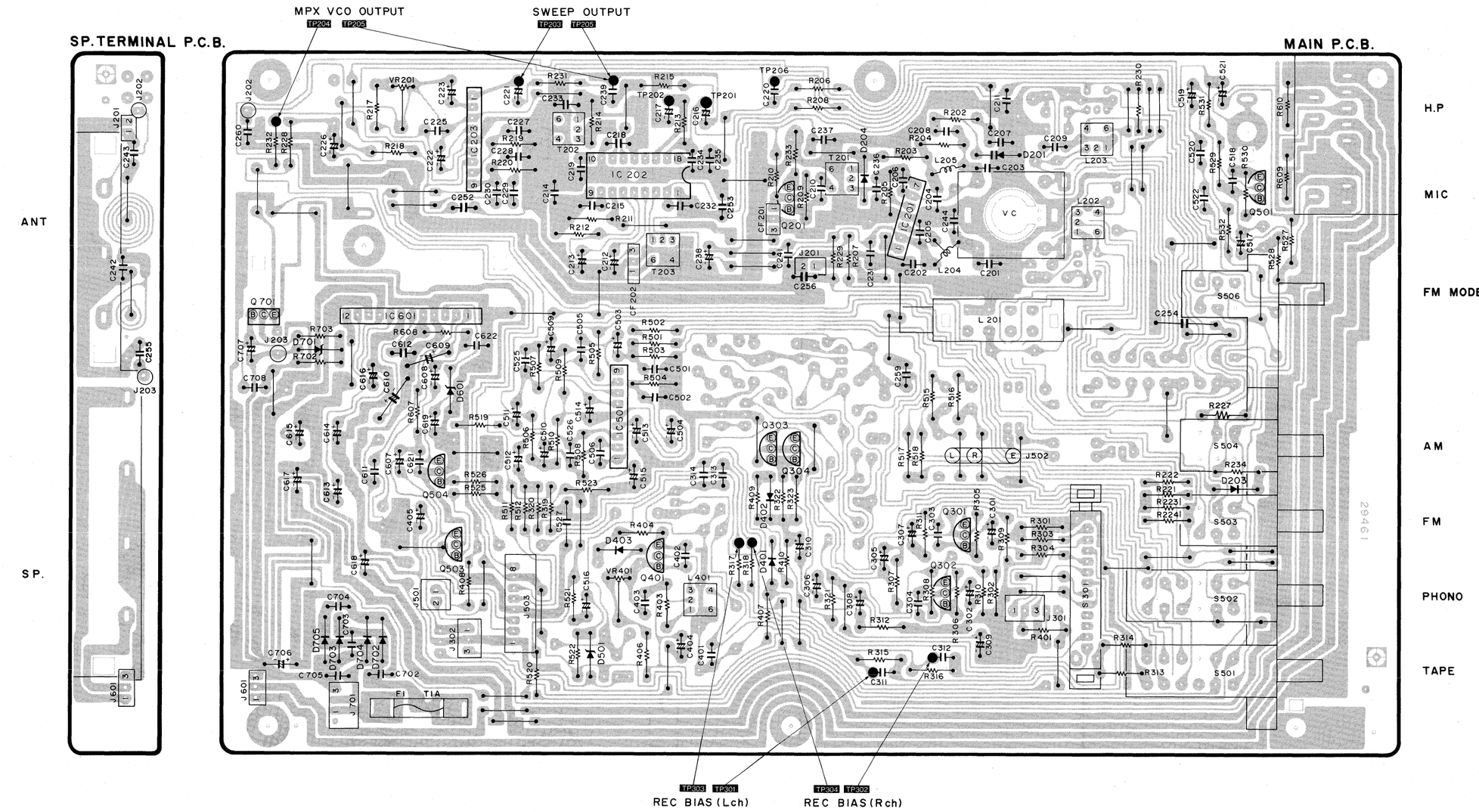
1. S701 . . . . . .Power switch in "OFF" position.
   S501 ~ 504, 506 . . . . . .Input selector switch in "FM" position.
   (S501 : TAPE, S502 : PHONO, S503 : FM, S504 : AM, S506 : FM mode)
   S301 . . . . . .Rec. play selector switch in "PLAY" position.
   SW1. . . . . .Muting switch in "OFF" position.
   SW2. . . . . .Motor switch in "OFF" position.
   S901 . . . . . .Phono speed selector switch in "33rpm" position.
   S902 . . . . . .Phono motor switch in "OFF" position.
2. DC voltages are to be measured with DC VTVM under no signal condition in FM or AM position.
3. ——— Positive voltage (+B) lines ▨ AF, P/B and PH signal ▨ Mic signal
   ▭▶ FM signal ▭▶ FM OSC ▨ Rec. signal
   ▬▶ AM signal ▬▶ AM OSC

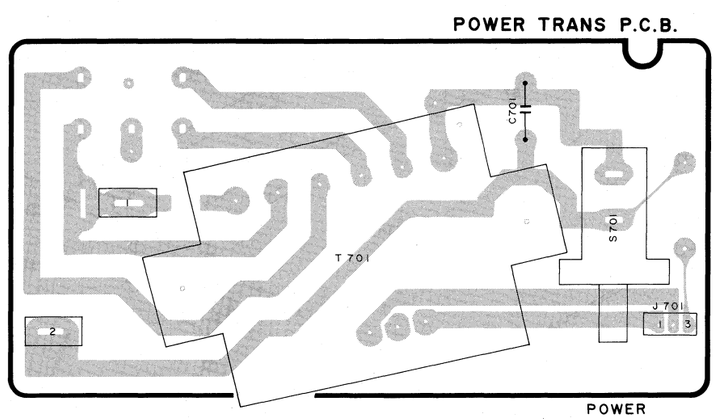


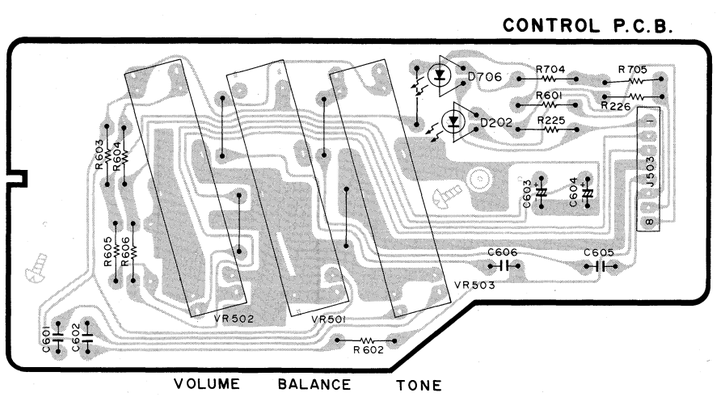
## ■ WIRING CONNECTION DIAGRAM

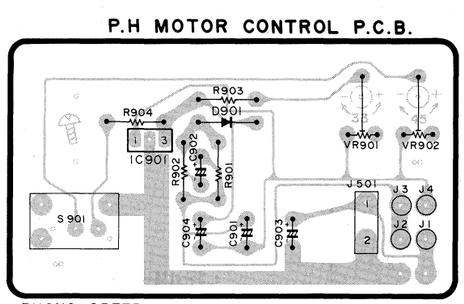


# ■ CIRCUIT BOARD DIAGRAM

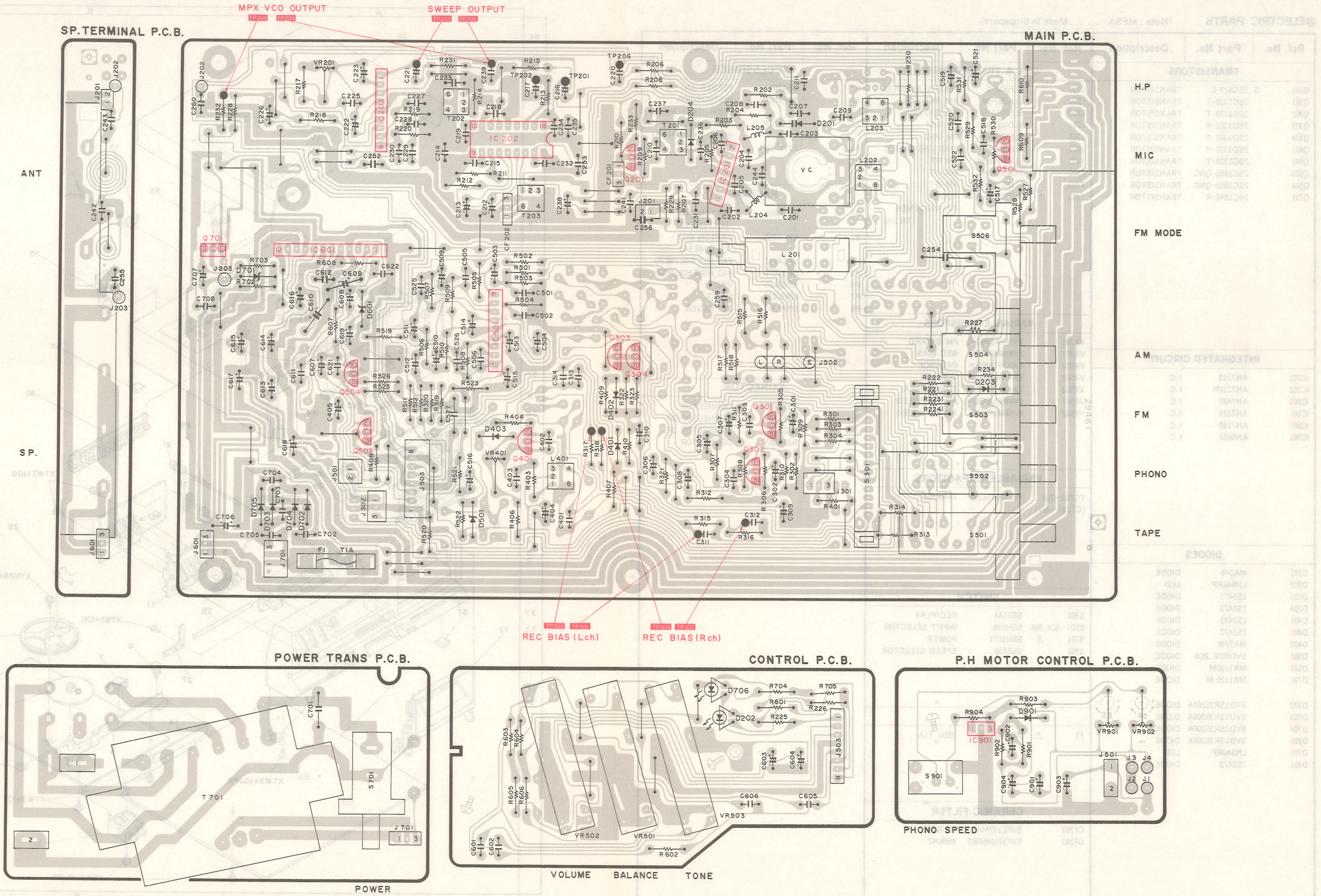


# ■ CIRCUIT BOARD DIAGRAM



# ■ REPLACEMENT PARTS LIST

●ELECTRIC PARTS (Note : MESA. . . . . Made in Singapore)

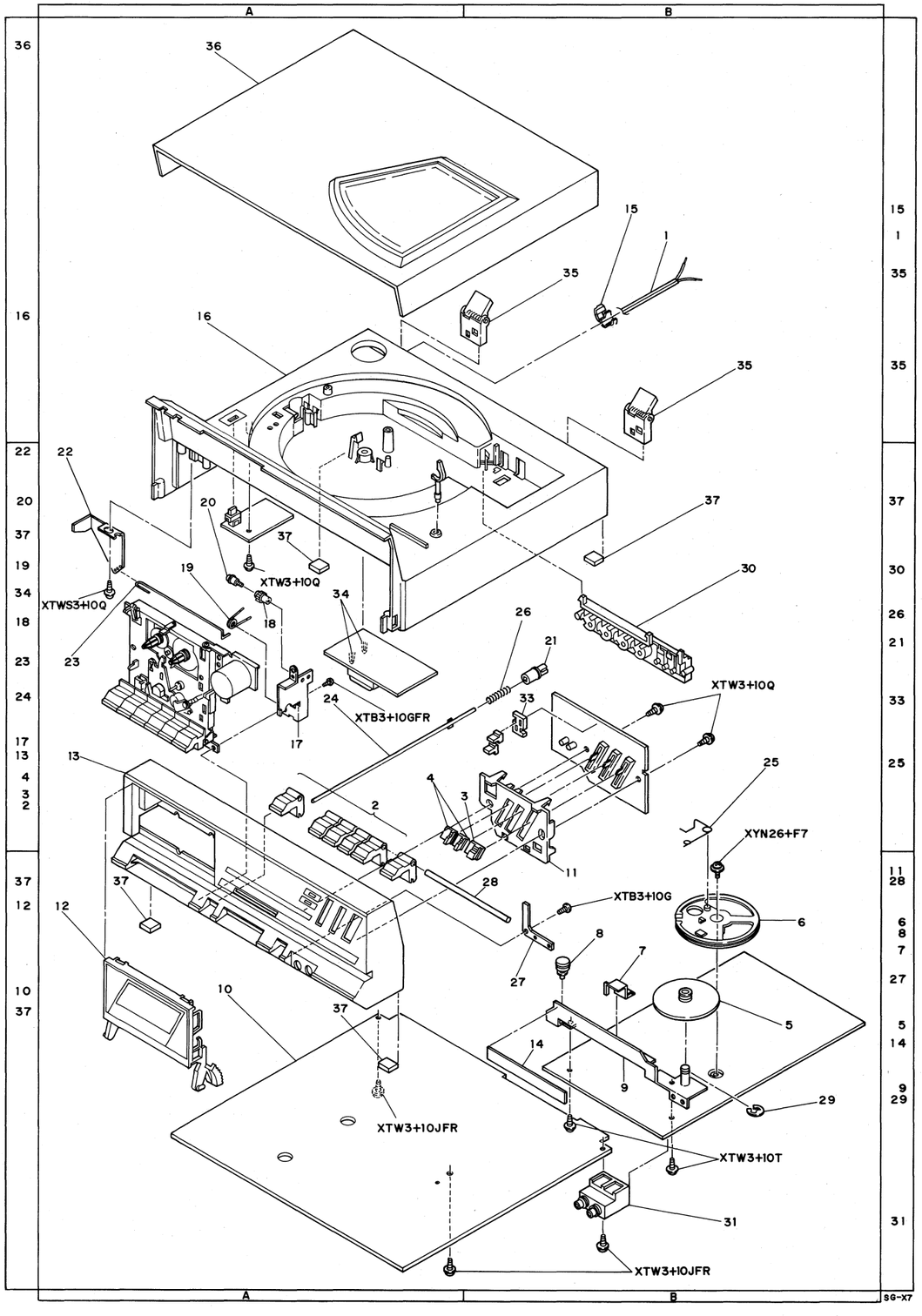
| Ref. No. | Part No. | Description |
|---|---|---|
| **TRANSISTORS** | | |
| Q201 | S 2SC829-C | TRANSISTOR |
| Q301 | 2SC1328-T | TRANSISTOR |
| Q302 | 2SC1328-T | TRANSISTOR |
| Q303 | 2SD1302-R | TRANSISTOR |
| Q304 | 2SD1302-R | TRANSISTOR |
| Q401 | 2SD1302-R | TRANSISTOR |
| Q501 | 2SC1328-T | TRANSISTOR |
| Q503 | 2SC1685-QNC | TRANSISTOR |
| Q504 | 2SC1685-QNC | TRANSISTOR |
| Q701 | 2SC1846-R | TRANSISTOR |
| **INTEGRATED CIRCUIT** | | |
| IC201 | AN7213 | I.C |
| IC202 | AN7222N | I.C |
| IC203 | AN7420 | I.C |
| IC501 | AN7310 | I.C |
| IC601 | AN7169 | I.C |
| IC901 | AN6610 | I.C |
| **DIODES** | | |
| D201 | MA345 | DIODE |
| D202 | LN846RP | LED |
| D203 | 1S2473 | DIODE |
| D204 | 1S2473 | DIODE |
| D401 | 1S2473 | DIODE |
| D402 | 1S2473 | DIODE |
| D403 | MA27W | DIODE |
| D501 | SVDRD8.2EB | DIODE |
| D601 | MA1180M | DIODE |
| D701 | MA1120-M | DIODE |
| D702 | SVD1SR35200A | DIODE |
| D703 | SVD1SR35200A | DIODE |
| D704 | SVD1SR35200A | DIODE |
| D705 | SVD1SR35200A | DIODE |
| D706 | LN846RP | LED |
| D901 | 1S2473 | DIODE |

| Ref. No. | Part No. | Description |
|---|---|---|
| **COIL & TRANSFORMERS** | | |
| L201 | SLF6C1-0 | FERRITE ANT(MESA) |
| L202 | SLA2B7-M | AM ANT COIL |
| L203 | SL02B13-M | AM OJC COIL |
| L204 | SLD4N27-0 | FM ANT |
| L205 | SL04P24-Z | FM OSC |
| L401 | SL09B3-M | BIAS OSC (MESA) |
| T201 | SLI4B108-M | FM IFT |
| T202 | SLI4B108-M | FM IFT |
| T203 | SLI2B105-M | AM IFT |
| T701 ⚠ | SLT5K217-W | POWER TRANSFORMER (MESA) |
| **VARIABLE RESISTORS** | | |
| VR201 | SVNAA53B2-Q | FM STEREO |
| VR401 | EVNM4AA00B54 | REC BIAS |
| VR501 | EWANF5X05G15 | BALANCE |
| VR502 | EWANA1X05A54 | VOLUME |
| VR503 | EWANA5X05A54 | TONE (MESA) |
| VR901 | EVNM4AA00B23 | PHONO SPEED |
| VR902 | EVNM4AA00B13 | PHONO SPEED |
| **VARIABLE CAPACITORS** | | |
| VC201~204 (CT201~204) | SVCCB41E139 | VARICON |
| **SWITCH** | | |
| S301 | SSS144 | REC/PLAY |
| S501~504,506 | SSH558 | INPUT SELECTOR |
| S701 ⚠ | SSH1071 | POWER |
| S901 | SSS138 | SPEED SELECTOR |
| **FUSE** | | |
| F1 ⚠ | XBA2C10TR0 | 250V,T1A |
| **CERAMIC FILTER** | | |
| CF201 | SVFE107MA5 | 10.7MHZ |
| CF202 | SVFSFU450B3 | 450KHZ |

| Ref. No. | Part No. | Description |
|---|---|---|
| **ACCESSORIES** | | |
| A1 | SSA269 | FEEDER ANT |
| A2 | SQF12535 | INSTRUCTION BOOK [EX](MESA) |
| A2 | SQF12536 | INSTRUCTION BOOK [Ei](MESA) |
| A3 | SJY5018-1 | EP ADAPTOR |
| **PACKING** | | |
| P1 | SPG5359 | CARTON BOX [EX](MESA) |
| P1 | SPG5360 | CARTON BOX [Ei](MESA) |
| P2 | SPS4573 | PAD, LEFT SIDE (MESA) |
| P3 | SPS4574 | PAD, RIGHT SIDE(MESA) |
| P4 | SPS4469 | PAD |
| P7 | SPH6232 | SHEET |
| P8 | SPP230 | SET COVER |
| **CONECTOR** | | |
| 1 | SJT3213 | CONNECTOR |
| 2 | SJT3319 | CONNECTOR,3P |
| 3 | SJS5327 | CONNECTOR,3P |
| 4 | SJS5807 | CONNECTOR |



# ■ PARTS LOCATION OF CABINET AND CHASSIS



# ■ REPLACEMENT PARTS LIST

(Note : MESA. . . . . Made in Singapore)

## ● CABINET AND CHASSIS PARTS

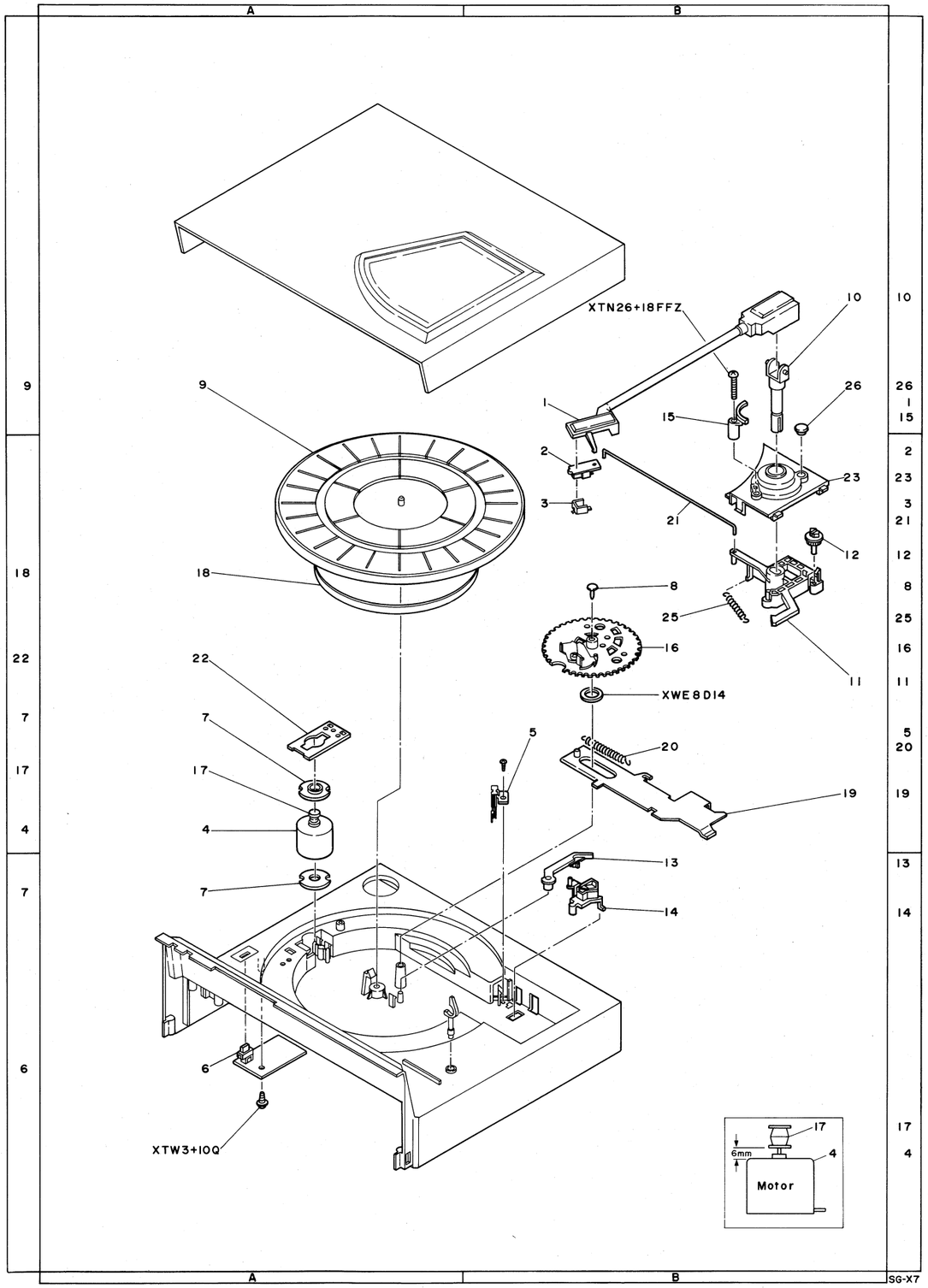
| Ref. No. | Part No. | Description | Pcs/ Set |
|---|---|---|---|
| 1 ⚠ | SJA138-3 | POWER CORD | |
| 2 | SBC717 | BUTTON | |
| 3 | SBD114 | KNOB (MESA) | |
| 4 | SBD115 | KNOB (MESA) | |
| 5 | SBN1196 | KNOB | |
| 6 | SDD62-2 | DIAL DRUM (MESA) | |
| 7 | SDP1195 | DIAL POINTER (MESA) | |
| 8 | SDR33-1 | PULLEY | |
| 9 | SDTGX7-KM | TUNING SHAFT (MESA) | |
| 10 | SYU539 | BOTTOM BOARD (MESA) | |
| 11 | SGX7741 | SLIDE BASE (MESA) | |
| 12 | SGXGX7-KM | CASSETTE HOLDER (MESA) | |
| 13 | SGYGX7-KE | PANEL ASS'Y (MESA) | |
| 14 | SHP66 | GUIDE SHEET (MESA) | |
| 15 | SHR937 | CORD CLAMP | |
| 16 | SKMGX7-KE | CABINET (MESA) | |
| 17 | SMQ30022 | DAMPER ANGLE (MESA) | |
| 18 | SMQ4096 | DAMPER GEAR | |
| 19 | SMQ60014 | SPRING (MESA) | |
| 20 | SNE270 | SCREW | |
| 21 | SUB203 | CONNECTION ROD | |
| 22 | SUB222 | CONNECTION ROD (MESA) | |
| 23 | SUB223 | CONNECTION ROD (MESA) | |
| 24 | SUB224 | CONNECTION ROD (MESA) | |
| 25 | SUS787 | SPRING (MESA) | |
| 26 | SUS788 | SPRING (MESA) | |
| 27 | SUW2927 | SHAFT FIXTURE (MESA) | |
| 28 | SUX37 | BUTTON SHAFT (MESA) | |
| 29 | XUC4FT | STOP RING | |
| 30 | SJF8045 | TERMINAL | |
| 31 | SJJ124 | JACK, MIC/PHONE | |
| 33 | SHR9760 | HOLDER (MESA) | |
| 34 | SJT777 | PLUG | |
| 35 | SBH9383 | HINGE | |
| 36 | SGKGX7-KM | DUST COVER (MESA) | |
| 37 | SHS3276 | FELT (MESA) | |

## ● RECORD PLAYER PARTS

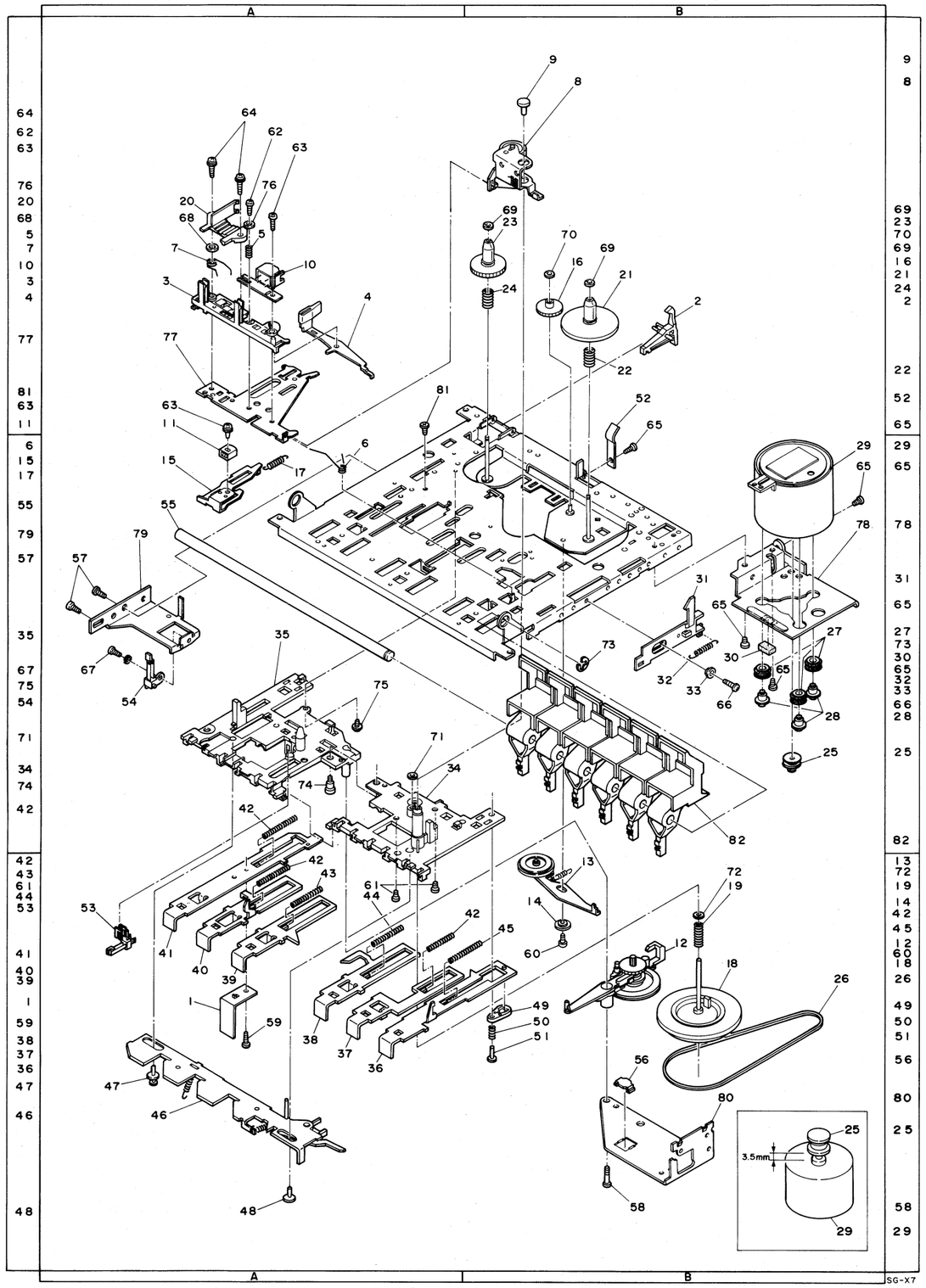
| Ref. No. | Part No. | Description | Pcs/ Set |
|---|---|---|---|
| 1 | EPA645STA | TONE ARM (MESA) | |
| 2 | EPC13STH | CARTRIDGE WITH STYLUS | |
| 3 | EPS41ST | STYLUS | |
| 4 | MMN6P2RE | PHONO MOTOR (MESA) | |
| 5 | SSP66 | LEAF SWITCH | |
| 6 | SBN1132 | SLIDE KNOB | |
| 7 | SHG9260 | MOTOR RUBBER | |
| 8 | SHR417 | PLASTIC RIVET (MESA) | |
| 9 | SJYGX7-KM | TURN TABLE ASS'Y (MESA) | |
| 10 | SJY5218 | PU REST | |
| 11 | SJY5220 | PU FIXING ARM (MESA) | |
| 12 | SJY5221 | PU CAM (MESA) | |
| 13 | SJY5222 | DRIVE LEVER (MESA) | |
| 14 | SJY5223 | OPERATING PLATE, SWITCH | |
| 15 | SJY5224 | LIFTER | |
| 16 | SJY486 | GEAR ASS'Y | |
| 17 | SJY90445 | CAPSTAN | |
| 18 | SJY90080-1 | FLAT BELT | |
| 19 | SJYGX7-KM1 | OPERATING PLATE ASS'Y (MESA) | |
| 20 | SJY90406 | COIL SPRING | |
| 21 | SJY90455 | SPOKE LEVER (MESA) | |
| 22 | SJY90456 | MOTOR ANGLE (MESA) | |
| 23 | SKM7540 | ARM BASE (MESA) | |
| 25 | SUS786 | SPRING (MESA) | |
| 26 | SHG9246-1 | RUBBER CAP | |



# ■ PARTS LOCATION OF RECORD PLAYER



# ■ PARTS LOCATION OF CASSETTE TAPE DECK




# ■ REPLACEMENT PARTS LIST

## ● CASSETTE TAPE DECK PARTS (Note : Made in Singapore)

| Ref. No. | Part No. | Description | Pcs/ Set |
|---|---|---|---|
| 1 | SMQ4332 | REC PLATE SPRING | |
| 2 | SMQ4778 | REC SAFETY LEVER | |
| 3 | SMQ5004 | HEAD BASE | |
| 4 | SMQ5006 | SENSING PIECE ASS'Y | |
| 5 | SMQ4596 | COIL SPRING | |
| 6 | RFS469ZA | TORSION SPRING | |
| 7 | RFS402ZA | TORSION SPRING | |
| 8 | SMQ5008 | PINCH ROLLER ASS'Y | |
| 9 | SMQ4774 | STOPPER | |
| 10 | SJH92 | R/P HEAD | |
| 11 | SJH82 | ERASE HEAD | |
| 12 | SMQ5018 | COIL SPRING | |
| 13 | SMQ5010 | RF CLUTCH ASS'Y | |
| 14 | SMQ5014 | COLLAR | |
| 15 | RFD156ZA | ERASE HEAD BASE PLATE | |
| 16 | SMQ4810 | FF GEAR | |
| 17 | RFS361ZA | COIL SPRING | |
| 18 | SMQ5016 | FLYWHEEL ASS'Y | |
| 19 | SMQ5018 | COIL SPRING | |
| 20 | RFE72ZA | ERASE HEAD BASE | |
| 21 | SMQ5022 | TAKE UP REEL ASS'Y | |
| 22 | SMQ5026 | COIL SPRING | |
| 23 | SMQ5024 | REEL ASS'Y, SUPPLY | |
| 24 | SMQ5028 | COIL SPRING | |
| 25 | SMQ4726 | PULLEY, MOTOR | |
| 26 | RFB38ZA | ANGULAR BELT | |
| 27 | SMQ1834 | RUBBER CUSHION, MOTOR | |
| 28 | SMQ1908 | MOTOR SCREW | |
| 29 | MMI6S2RJ | MOTOR (MESA) | |
| 30 | RFI28ZA | ANTI VIBRATION FELT | |
| 31 | RFY327ZA | EJECT SLIDE LEVER | |
| 32 | RFS429ZA | COIL SPRING | |
| 33 | SMQ5170 | COLLAR,ELECT LEVER | |
| 34 | SMQ5454 | BUTTON BASE,R | |
| 35 | SMQ5456 | BUTTON BASE,L | |
| 36 | RFY260ZA | PAUSE BUTTON LEVER ASS'Y | |
| 37 | RFY261ZA | STOP BUTTON LEVER | |
| 38 | RFY262ZA | FF BUTTON LEVER | |
| 39 | RFY263ZA | REWIND BUTTON LEVER | |
| 40 | RFY388ZA | PLAY BUTTON LEVER | |
| 41 | RFY265ZA | RECORDING BUTTON LEVER | |
| 42 | SMQ5050 | COIL SPRING | |
| 43 | SMQ5052 | COIL SPRING | |
| 44 | SMQ5054 | COIL SPRING | |
| 45 | SMQ5056 | COIL SPRING | |
| 46 | SMQ5032 | OPERATION PLATE | |
| 47 | SMQ4276 | OPERATION PLATE SHAFT, REC | |
| 48 | SMQ5034 | OPERATION PLATE SHAFT, STOP | |
| 49 | SMQ2444 | CLICK LEVER, PAUSE | |
| 50 | SMQ5048 | COIL SPRING | |
| 51 | SMQ4862 | STOPPER, PAUSE CLICK LEVER | |
| 52 | SMQT1447 | PLATE SPRING | |
| 53 | SMQ5060 | LEAF SWITCH | |
| 54 | SMQ5062 | LEAF SWITCH | |
| 55 | SMQ50004 | PUSH BUTTON LEVER SHAFT (MESA) | |
| 56 | SMQ2538 | PAD, FLYWHEEL | |
| 57 | XSN26+3 | SCREW 26X3 | |
| 58 | SMQ5070 | SCREW | |
| 59 S | XSN2+3 | SCREW 2X3 | |
| 60 | XSN2+4 | SCREW 2X4 | |
| 61 | XSN2+5 | SCREW 2X5 | |
| 62 | XSN2+7 | SCREW 2X7 | |
| 63 | XSN2+7 | SCREW 2X7 | |
| 64 | XSN2+8 | SCREW 2X8 | |
| 65 | XSN26+4 | SCREW 26X4 | |
| 66 | XSN26+5 | SCREW 26X5 | |
| 67 | XSN2+4 | SCREW 2X4 | |
| 68 | RFN104ZA | WASHER | |
| 69 | SMQ4928 | POLY WASHER | |
| 70 | SMQ4930 | POLY WASHER | |
| 71 | SMQ1402 | NYLON WASHER | |
| 72 | SMQ5020 | WASHER | |
| 73 | XUC32FT | E RING | |
| 74 | RFE128ZA | SCREW | |
| 75 | SMQ5068 | SCREW | |
| 76 | XWE2 | WASHER | |
| 77 | RFD164ZA | HEAD PANEL | |
| 78 | SMQT1448 | MOTOR BRACKET | |
| 79 | SMQT1449 | MS BRACKET | |
| 80 | SMQT1450 | FLYWHEEL BRACKET | |
| 81 | RFE44ZA | SCREW | |
| 82 | SBC716 | CASSETTE BUTTON | |





Printed in Japan
850601700 Ⓙ TM/TN

# CARACTERISTIQUES TECHNIQUES

## ■ SECTION AMPLIFICATEUR

| | |
|---|---|
| **Puissance de sortie** | |
| **PSM** | 10 W (2x5 W, DHT 10%, 4Ω) |
| **Impédance de charge** | 4Ω~16Ω |
| **Sensibilité et impédance d'entrée** | |
| **MICRO (MIC)** | 1,5 mV/1,5 kΩ |
| **Commandes de tonalité** | 10 kHz, +6 dB ~ 12 dB |
| **Physiologique** | 100 Hz, +6 dB |
| | (Volume sur la position –30 dB) |

## ■ SECTION SYNTONISATEUR FM

| | |
|---|---|
| **Gamme de fréquence** | 87,5 ~ 108 MHz |
| **Fréquence intermédiaire (IF)** | 10,7 MHz |
| **Sensibilité (à 1 kHz, Signal/Bruit 26 dB, mod. 40 kHz)** | |
| | 3,8 μV (75Ω) |
| **Rapport image** | 35 dB (98 MHz) |
| **Signal/Bruilt MONO** | 65 dB (IHF) |
| **Distorsion harmonique totale (à 1 kHz, 60 dB, mod. 40 kHz)** | |
| **MONO** | 0,3% |
| **STEREO** | 0,5% |
| **Séparation stéréophonique (entrée 60 dB, mod. 40 kHz)** | |
| **1 kHz** | 35 dB |

## ■ SECTION SYNTONISATEUR AM

| | |
|---|---|
| **Gamme de fréquence** | 527 ~ 1605 kHz |
| **Fréquence intermédiaire (IF)** | 450 kHz |
| **Sensibilité (50 mW)** | 200 μV/m (1 MHz) |

## ■ SECTION TOURNE-DISQUE

| | |
|---|---|
| **Système** | Tourne-disque automatique entraîné par courroie |
| **Taille de plateau** | 28 cm |
| **Vitesse de rotation** | 33-1/3 et 45 t/mn. |
| **Moteur phono** | Moteur CC à asservissement électronique |
| **Cellule phonoélectrice** | Céramique (EPC-13STH) |
| **Pointe de lecture** | Saphir (EPS-41ST) |
| **Plage de force d'appui** | 5,5 g |

## ■ SECTION MAGNÉTPHONE

| | |
|---|---|
| **Platine** | Système cassette à arrêt automatique avec commande de pause |
| **Pistes** | 2 voies, 4 pistes |
| **Moteurs** | Moteur CC à asservissement électronique |
| **Système d'enregistrement** | Polarisation C.A., 53 kHz |
| **Effacement** | Aimant |
| **Vitesse de bande** | 4,75 cm/sec. |
| **Réponse de fréquences** | 50 Hz ~ 12 kHz |
| **Pleurage et scintillement** | 0,2% (WRMS) |
| **RAPPORTS S/B** | 40 dB (A-WTD) |

## ■ DIVERS

| | |
|---|---|
| **Consommation** | 30 W |
| **Alimentation** | CA 220 V, 50 Hz/60 Hz |
| **Dimensions (LxHxPr)** | 380 x 129,5 x 408 mm |
| **Poids** | 3,8 kg |

# MESURES ET REGLAGES

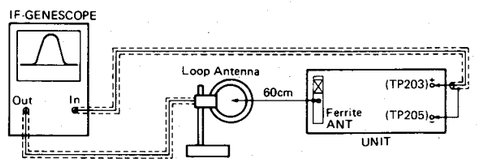
## ■ Radio

**Positions des commandes**
- Command de volume . . . . . Maximum
- Compensateur de fréquences . . . . . Centre
- Commande d'équilibrage . . . . . Centre
- La sortie du générateur de signaux ne doit pas être plus élevée que cela est nécessaire afin d'obtenir l'indication de la sortie.
- S'assurer que l'ensemble des haut-parleurs soit relié au récepteur lors de l'alignement (ou lors de l'utilisation des résistances de charges fictives correspondantes).

### ALIGNEMENT AM-IF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position AM.
3. Régler le cadran radio sur le point de non interférence.
4. Régler **T203** afin d'obtenir une sortie maximale et une courbe symétrique.

Condition du généscope IF:
Fréquence . . . . . 450 kHz





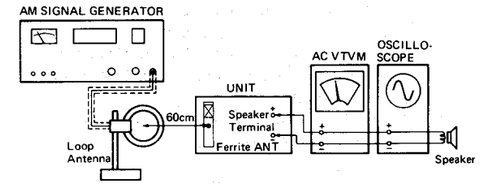

# MESURES ET REGLAGES

## ■ Radio

### ALIGNEMENT AM-GF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position AM.
3. Régler le cadran radio et le générateur de signaux sur **510 kHz.**
   **(Régler l'aiguille du cadran sur la gauche de la graduation ou sur le bord de la fréquence inférieure.)**
4. Régler **L203** pour obtenir une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur **600 kHz.**
6. Régler **L202** pour obtenir une sortie maximale.
7. Régler le cadran radio et le générateur de signaux sur **1670 kHz.**
   **(Régler l'aiguille du cadran sur la droite de la graduation ou sur le bord de la fréquence supérieure.)**
8. Régler **CT204** et **CT203** pour obtenir une sortie maximale.
9. Répéter la marche à suivre 3. ~ 8.

Condition du générateur:
Modulation . . . . . 30%
Modulation Fréquence . . . . . 400 Hz

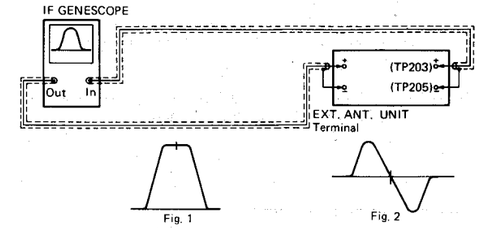



### ALIGNEMENT FM-IF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position FM.
3. Régler le cadran radio sur le point de non interférence.
4. Régler **T201** pour obtenir une amplitude maximale et une courbe symétrique. (Se reporter à la Fig. 1)
5. Régler **T202** pour obtenir une amplitude maximale et une bonne linéarité entre les repères ± 100 kHz environ. (Se reporter à la Fig. 2)

**Remarque:** Avant d'effectuer l'alignement, tourner **T202** entièrement dans le sens inverse des aiguilles d'une montre.

Condition du généscope IF de balayage:
Fréquence . . . . . 10.7 MHz

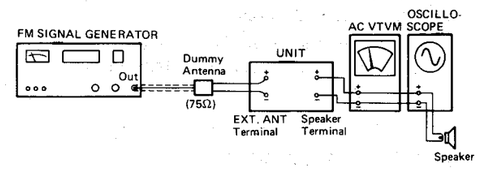



### ALIGNEMENT FM-GF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position FM.
3. Régler le cadran radio et le générateur de signaux sur **87.25 MHz.**
   **(Régler l'aiguille du cadran sur la gauche de la graduation ou sur le bord de la fréquence inférieure.)**
4. Régler **L205** et **L204** pour obtenir une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur **108.40 MHz.**
   **(Régler l'aiguille du cadran sur la droite de la graduation ou sur le bord de la fréquence supérieure.)**
6. Régler **CT202** et **CT201** et pour obtenir une sortie maximale.
7. Répéter la marche à suivre 3. ~ 6.

**Remarque:** Les réglages doivent être effectués sur la fréquence médiane étant donné que l'on a trois indications de sortie.

Condition du générateur:
Modulation . . . . . 30%
Modulation Fréquence . . . . . 400 Hz



courroie
28 cm
45 t/mn.
ctronique
C-13STH)
PS-41ST)
5,5 g

omatique
de pause
, 4 pistes
ctronique
., 53 kHz
Aimant
5 cm/sec.
~ 12 kHz
(WRMS)
(A-WTD)

30 W
Hz/60 Hz
408 mm
3,8 kg

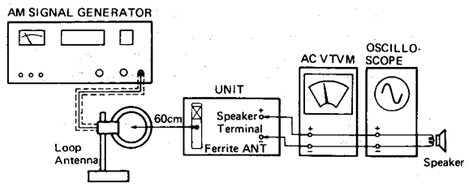
# MESURES ET REGLAGES

## ■ Radio

### ALIGNEMENT AM-GF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position AM.
3. Régler le cadran radio et le générateur de signaux sur **510 kHz.**
   **(Régler l'aiguille du cadran sur la gauche de la graduation ou sur le bord de la fréquence inférieure.)**
4. Régler **L203** pour obtenir une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur **600 kHz.**
6. Régler **L202** pour obtenir une sortie maximale.
7. Régler le cadran radio et le générateur de signaux sur **1670 kHz.**
   **(Régler l'aiguille du cadran sur la droite de la graduation ou sur le bord de la fréquence supérieure.)**
8. Régler **CT204** et **CT203** pour obtenir une sortie maximale.
9. Répéter la marche à suivre 3. ~ 8.

Condition du générateur:
Modulation . . . . . 30%
Modulation Fréquence . . . . . 400 Hz

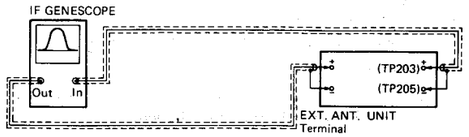



### ALIGNEMENT FM-IF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position FM.
3. Régler le cadran radio sur le point de non interférence.
4. Régler **T201** pour obtenir une amplitude maximale et une courbe symétrique. (Se reporter à la Fig. 1)
5. Régler **T202** pour obtenir une amplitude maximale et une bonne linéarité entre les repères ± 100 kHz environ. (Se reporter à la Fig. 2)

**Remarque:** Avant d'effectuer l'alignement, tourner **T202** entièrement dans le sens inverse des aiguilles d'une montre.

Condition du généscope IF de balayage:
Fréquence . . . . . 10.7 MHz



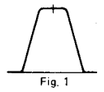



Fig. 1

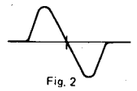


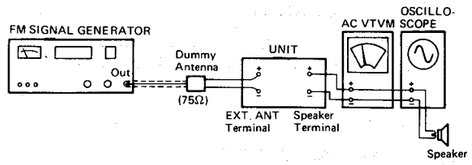
Fig. 2

### ALIGNEMENT FM-GF

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position FM.
3. Régler le cadran radio et le générateur de signaux sur **87.25 MHz.**
   **(Régler l'aiguille du cadran sur la gauche de la graduation ou sur le bord de la fréquence inférieure.)**
4. Régler **L205** et **L204** pour obtenir une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur **108.40 MHz.**
   **(Régler l'aiguille du cadran sur la droite de la graduation ou sur le bord de la fréquence supérieure.)**
6. Régler **CT202** et **CT201** et pour obtenir une sortie maximale.
7. Répéter la marche à suivre 3. ~ 6.

**Remarque:** Les réglages doivent être effectués sur la fréquence médiane étant donné que l'on a trois indications de sortie.

Condition du générateur:
Modulation . . . . . 30%
Modulation Fréquence . . . . . 400 Hz





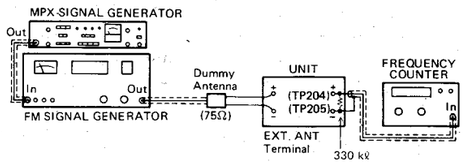

MESURES ET REGLAGES

## ■ Radio

### ALIGNEMENT STEREO FM (FONCTIONNEMENT LIBRE)

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position FM AUTO. (Avec le bouton-sélecteur de mode FM.)
3. Régler lecadran radio et le générateur de signaux sur **98 MHz.**
4. Régler **VR201** sur **38 kHz** ± **100 Hz** sur le compteur de fréquences.
5. Accorder une émission stéréo et s'assurer que la fréquence reste sur 38 kHz.

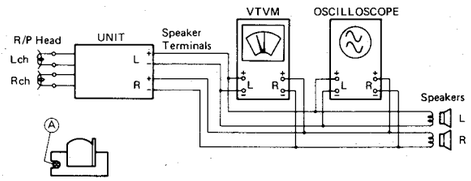
Condition du générateur:
Modulation . . . . . 0%
Modulation Fréquence . . . . . 0 Hz
Taux de modulation du signal
Pilote 19 kHz . . . . . 9%




## ■ Bande

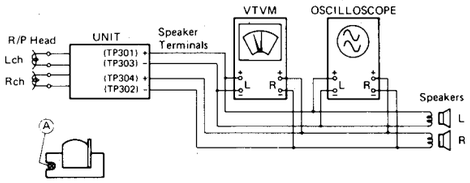
### ALIGNEMENT D'AZIMUT DE LA TETE

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Bande de reproduction d'essai QZZCAC (10 kHz – 20 dB).
3. Régler la vis (A) afin d'obtenir une indication maximale d'égalisation de sortie des deux canaux.
4. Après l'alignement, bloquer la vis (A) de réglage de tête avec de la laque.




### ALIGNEMENT DE POLARISATION D'ENREGISTREMENT

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Mettre l'appareil sur la position TAPE.
3. Mettre le magnétocassette sur le mode d'enregistrement.
4. Régler **VR401** sur **4.1 mV** ± **0.3 mV** du VTVM.



# TECHNISCHE DATEN

## ■ VERSTÄRKERTEIL

| | |
|---|---|
| **Ausgangsleistung** | |
| **Musiki** | 10 W (2x5 W, 10% klirr, 4Ω) |
| **Lautsprecherimpedanz** | 4Ω~16Ω |
| **Eingangsempfindlichkeit und-impedanz** | |
| **Micro (MIC)** | 1,5 mV/1,5 kΩ |
| **Klangregler** | 10 kHz, +6 dB ~ −12 dB |
| **Lautstärkekonturregler** | 100 Hz, +6 dB (Lautstärke auf −30 dB) |

## ■ UKW-TUNERTEIL

| | |
|---|---|
| **Wellenbereich** | 87,5~108 MHz |
| **Zwischenfrequenz (ZF)** | 10,7 MHz |
| **Eingangsempfindlichkeit (bei 1 kHz, Geräuschspannungsabstand 26 dB, 40 kHz mod.)** | 3,8 μV (75Ω) |
| **Spiegelverhältnis** | 7 dB (98 MHz) |
| **Geräuschabstand MONO** | 55 dB |
| **Gesamtklirrfaktor (bei 1 kHz, 60 dB, 40 kHz mod.)** | |
| **Mono** | 0,3% |
| **Stereo** | 0,5% |
| **Übersprechdämpfung (Eingang 60 dB, 40 kHz mod.)** | |
| **1 kHz** | 35 dB |

## ■ MW-TUNERTEIL

| | |
|---|---|
| **Wellenbereiche** | 527 ~ 1605 kHz |
| **Zwischenfrequenz (ZF)** | 450 kHz |
| **Eingangsempfindlichkeit (50 mW)** | 200 μV/m (1 MHz) |

## ■ PLATTENSPIELERTEIL

| | |
|---|---|
| **Plattenspielersystem** | Riemenantrieb |
| **Plattenteller** | 28 cm |
| **Plattentellerdrehzahl** | 33-1/3 U/min. und 45 U/min. |
| **Plattenspierlermotor** | Electronisch gesteuerter Gleichstrommotor |
| **Tonabnehmer** | Keramischer-Tonabnehmer (EPC-13STH) |
| **Abtastnadel** | Saphir-Spitze (EPS-41ST) |
| **Auflagekraft der Abtastnadel** | 5,5 g |

## ■ TONBANDTEIL

| | |
|---|---|
| **Typ** | Autostop-Cassettensystem mit Pausetaste |
| **Spurlage** | 4 Spuren/2 Kanäle |
| **Motor** | Electronisch gesteuerter Gleichstrommotor |
| **Aufnahmesystem** | Wechselstrom-Vormagnetisierung, 53 MHz |
| **Löschsystem** | Magnetisch |
| **Bandgeschwindigkeit** | 4,75 cm/s |
| **Leistungsbandbreite** | 50 Hz ~ 12 kHz |
| **Gleichlaufschwankungen** | 0,2% (bewertet) |
| **Fremdspannungsabstand** | 40 dB (A-WTD) |

## ■ ALLGEMEINE DATEN

| | |
|---|---|
| **Leistungsaufnahme** | 30 W |
| **Netzspannung** | Wechselstrom 50 Hz/60 Hz, 220V |
| **Abmessungen (BxHxT)** | 380 x 129,5 x 408 mm |
| **Gewicht** | 3,8 kg |

# MESSUNGEN UND EINSTELLUNGEN

## ■ Radio

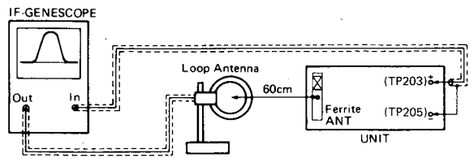
**Prüfpositionen**

- Lautstärkeregler . . . . . Maximum
- Equalizer . . . . . Mitte
- Balanceregler . . . . . Mitte
- Ausgang des Signalgenerators sollte nicht höher als notwendig sein, um eine Ausgangsanzeige zu erhalten.
- Vor der Abgleichung überprüfen, daß das Lautsprecher-System an den Receiver angeschlossen ist (oder Blind-Lastwiderstände verwenden).

### MW-ZF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf AM stellen.
3. Das Radio auf einen Punkt ohne Interferenzen abstimmen.
4. **T203** auf maximalen Ausgang und symmetrische Kurven abstimmen.

Zustand des ZF-Ablenkgenescopes:
Frequenz . . . . . 450 kHz.



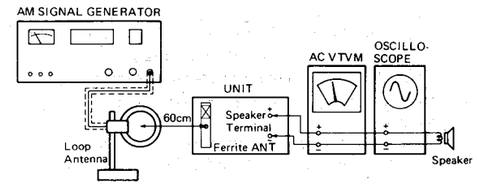



## ■ Radio

### MW-HF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf AM stellen.
3. Radio und Signalgenerator auf **510 kHz** einstellen. **(Die Skalennadel auf die linke Seite der Skala oder untere Frequenzkante stellen.)**
4. **L203** für maximalen Ausgang einstellen.
5. Radio und Signalgenerator auf **600 kHz** einstellen.
6. **L202** für maximalen Ausgang einstellen.
7. Radio und Signalgenerator auf **1670 kHz** einstellen. **(Die Skalennadel auf die rechte Seite der Skala oder obere Frequenzkante stellen.)**
8. **CT204** und **CT203** für maximalen Ausgang einstellen.
9. Schritte 3. ~ 8. wiederholen.

Zustand des Generators:
Modulation . . . . . 30%
Modulation Frequenz . . . . . 400 Hz

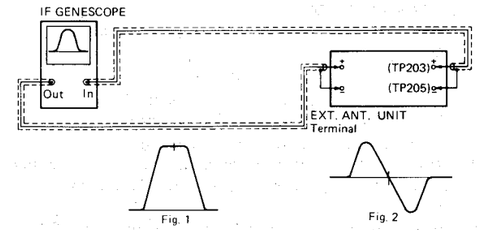



### UKW-ZF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf UKW stellen.
3. Das Radio auf einen Punkt ohne Interferenzen abstimmen.
4. **T201** auf maximale Amplitude und symmetrische Kurve einstellen. (Siehe Abb. 1)
5. **T202** auf maximale Amplitude und gute Lineartiät zwischen etwa den ± 100 kHz Marken einstellen. (Siehe Abb. 2)

**HINWEIS:** Vor der Abgleichung den Kern von **T202** ganz in Gegenuhrzeigerrichtung drehen.

Zustand des ZF-Ablenkgenescopes:
Frequenz . . . . . 10.7 MHz

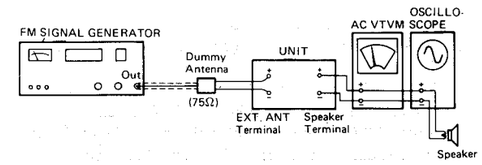



### UKW-HF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf UKW stellen.
3. Radio und Signalgenerator auf **87,25 MHz** einstellen. **(Die Skalennadel auf die linke Seite der Skala oder untere Frequenzkante stellen.)**
4. **L205** und **L204** für maximalen Ausgang einstellen
5. Radio und Signalgenerator auf **108.40 MHz** einstellen.
6. **CT202** und **CT201** für maximalen Ausgang einstellen. **(Die Skalennadel auf die rechte Seite der Skala oder obere Frequenzkante stellen.)**
7. Schritte 3. ~ 6. wiederholen.

**HINWEIS:** Alle drei Ausgang-Anzeigen sind vorhanden, die Einstellungen müssen mit der Mittenfrequenz erfolgen.

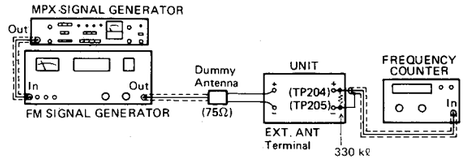
Zustand des Generators:
Modulation . . . . . 30%
Modulation Frequenz . . . . . 400 Hz




### UKW-STEREO-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Den UKW-Betriebsart-Wahlschalter in die FM AUTO position stellen.
3. Radio und Signalgenerator auf **98 MHz** einstellen.
4. **VR201** auf **38 kHz** ± **100 Hz** auf Frequenzzähler einstellen.
5. Einen Stereosenden einstellen und überprüfen, daß die Frequenz bei 38 kHz bleibt.

Zustand des Generators:
Modulation . . . . . 0%
Modulation Frequenz . . . . . 0 Hz
Modulationsrate des 19 kHz Pilotsignals . . . . . 9%



# TECHNISCHE DATEN

## ■ VERSTÄRKERTEIL

| | |
|---|---|
| **Ausgangsleistung** | |
| **Musiki** | 10 W (2x5 W, 10% klirr, 4Ω) |
| **Lautsprecherimpedanz** | 4Ω~16Ω |
| **Eingangsempfindlichkeit und-impedanz** | |
| **Micro (MIC)** | 1,5 mV/1,5 kΩ |
| **Klangregler** | 10 kHz, +6 dB ~ −12 dB |
| **Lautstärkekonturregler** | 100 Hz, +6 dB (Lautstärke auf −30 dB) |

## ■ UKW-TUNERTEIL

| | |
|---|---|
| **Wellenbereich** | 87,5~108 MHz |
| **Zwischenfrequenz (ZF)** | 10,7 MHz |
| **Eingangsempfindlichkeit (bei 1 kHz, Geräuschspannungsabstand 26 dB, 40 kHz mod.)** | 3,8 μV (75Ω) |
| **Spiegelverhältnis** | 7 dB (98 MHz) |
| **Geräuschabstand MONO** | 55 dB |
| **Gesamtklirrfaktor (bei 1 kHz, 60 dB, 40 kHz mod.)** | |
| **Mono** | 0,3% |
| **Stereo** | 0,5% |
| **Übersprechdämpfung (Eingang 60 dB, 40 kHz mod.)** | |
| **1 kHz** | 35 dB |

## ■ MW-TUNERTEIL

| | |
|---|---|
| **Wellenbereiche** | 527 ~ 1605 kHz |
| **Zwischenfrequenz (ZF)** | 450 kHz |
| **Eingangsempfindlichkeit (50 mW)** | 200 μV/m (1 MHz) |

## ■ PLATTENSPIELERTEIL

| | |
|---|---|
| **Plattenspielersystem** | Riemenantrieb |
| **Plattenteller** | 28 cm |
| **Plattentellerdrehzahl** | 33-1/3 U/min. und 45 U/min. |
| **Plattenspierlermotor** | Electronisch gesteuerter Gleichstrommotor |
| **Tonabnehmer** | Keramischer-Tonabnehmer (EPC-13STH) |
| **Abtastnadel** | Saphir-Spitze (EPS-41ST) |
| **Auflagekraft der Abtastnadel** | 5,5 g |

## ■ TONBANDTEIL

| | |
|---|---|
| **Typ** | Autostop-Cassettensystem mit Pausetaste |
| **Spurlage** | 4 Spuren/2 Kanäle |
| **Motor** | Electronisch gesteuerter Gleichstrommotor |
| **Aufnahmesystem** | Wechselstrom-Vormagnetisierung, 53 MHz |
| **Löschsystem** | Magnetisch |
| **Bandgeschwindigkeit** | 4,75 cm/s |
| **Leistungsbandbreite** | 50 Hz ~ 12 kHz |
| **Gleichlaufschwankungen** | 0,2% (bewertet) |
| **Fremdspannungsabstand** | 40 dB (A-WTD) |

## ■ ALLGEMEINE DATEN

| | |
|---|---|
| **Leistungsaufnahme** | 30 W |
| **Netzspannung** | Wechselstrom 50 Hz/60 Hz, 220V |
| **Abmessungen (B×H×T)** | 380 x 129,5 x 408 mm |
| **Gewicht** | 3,8 kg |

# MESSUNGEN UND EINSTELLUNGEN

## ■ Radio

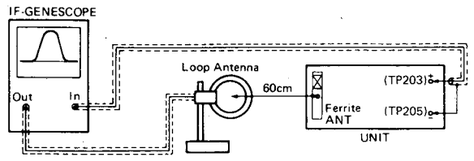
**Prüfpositionen**

- Lautstärkeregler . . . . . Maximum
- Equalizer . . . . . Mitte
- Balanceregler . . . . . Mitte
- Ausgang des Signalgenerators sollte nicht höher als notwendig sein, um eine Ausgangsanzeige zu erhalten.
- Vor der Abgleichung überprüfen, daß das Lautsprecher-System an den Receiver angeschlossen ist (oder Blind-Lastwiderstände verwenden).

### MW-ZF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf AM stellen.
3. Das Radio auf einen Punkt ohne Interferenzen abstimmen.
4. **T203** auf maximalen Ausgang und symmetrische Kurven abstimmen.

Zustand des ZF-Ablenkgenescopes:
Frequenz . . . . . 450 kHz.



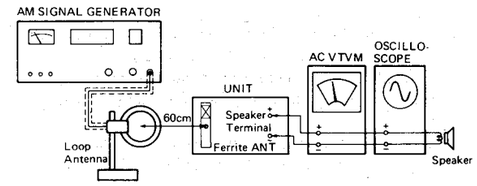



## ■ Radio

### MW-HF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf AM stellen.
3. Radio und Signalgenerator auf **510 kHz** einstellen. **(Die Skalennadel auf die linke Seite der Skala oder untere Frequenzkante stellen.)**
4. **L203** für maximalen Ausgang einstellen.
5. Radio und Signalgenerator auf **600 kHz** einstellen.
6. **L202** für maximalen Ausgang einstellen.
7. Radio und Signalgenerator auf **1670 kHz** einstellen. **(Die Skalennadel auf die rechte Seite der Skala oder obere Frequenzkante stellen.)**
8. **CT204** und **CT203** für maximalen Ausgang einstellen.
9. Schritte 3. ~ 8. wiederholen.

Zustand des Generators:
Modulation . . . . . 30%
Modulation Frequenz . . . . . 400 Hz

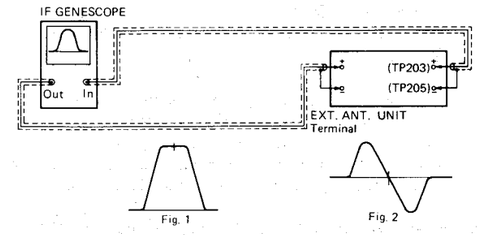



### UKW-ZF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf UKW stellen.
3. Das Radio auf einen Punkt ohne Interferenzen abstimmen.
4. **T201** auf maximale Amplitude und symmetrische Kurve einstellen. (Siehe Abb. 1)
5. **T202** auf maximale Amplitude und gute Lineartiät zwischen etwa den ± 100 kHz Marken einstellen. (Siehe Abb. 2)

**HINWEIS:** Vor der Abgleichung den Kern von **T202** ganz in Gegenuhrzeigerrichtung drehen.

Zustand des ZF-Ablenkgenescopes:
Frequenz . . . . . 10.7 MHz

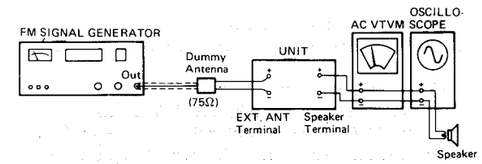



### UKW-HF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf UKW stellen.
3. Radio und Signalgenerator auf **87,25 MHz** einstellen. **(Die Skalennadel auf die linke Seite der Skala oder untere Frequenzkante stellen.)**
4. **L205** und **L204** für maximalen Ausgang einstellen
5. Radio und Signalgenerator auf **108.40 MHz** einstellen.
6. **CT202** und **CT201** für maximalen Ausgang einstellen. **(Die Skalennadel auf die rechte Seite der Skala oder obere Frequenzkante stellen.)**
7. Schritte 3. ~ 6. wiederholen.

**HINWEIS:** Alle drei Ausgang-Anzeigen sind vorhanden, die Einstellungen müssen mit der Mittenfrequenz erfolgen.

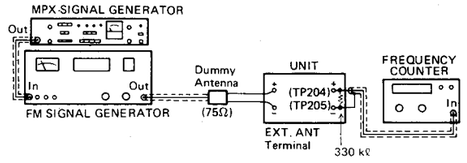
Zustand des Generators:
Modulation . . . . . 30%
Modulation Frequenz . . . . . 400 Hz




### UKW-STEREO-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Den UKW-Betriebsart-Wahlschalter in die FM AUTO position stellen.
3. Radio und Signalgenerator auf **98 MHz** einstellen.
4. **VR201** auf **38 kHz** ± **100 Hz** auf Frequenzzähler einstellen.
5. Einen Stereosenden einstellen und überprüfen, daß die Frequenz bei 38 kHz bleibt.

Zustand des Generators:
Modulation . . . . . 0%
Modulation Frequenz . . . . . 0 Hz
Modulationsrate des 19 kHz Pilotsignals . . . . . 9%



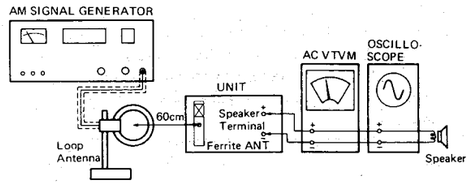
# MESSUNGEN UND EINSTELLUNGEN

■ **Radio**

### MW-HF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf AM stellen.
3. Radio und Signalgenerator auf **510 kHz** einstellen. **(Die Skalennadel auf die linke Seite der Skala oder untere Frequenzkante stellen.)**
4. **L203** für maximalen Ausgang einstellen.
5. Radio und Signalgenerator auf **600 kHz** einstellen.
6. **L202** für maximalen Ausgang einstellen.
7. Radio und Signalgenerator auf **1670 kHz** einstellen. **(Die Skalennadel auf die rechte Seite der Skala oder obere Frequenzkante stellen.)**
8. **CT204** und **CT203** für maximalen Ausgang einstellen.
9. Schritte 3. ~ 8. wiederholen.

Zustand des Generators:
Modulation . . . . . 30%
Modulation Frequenz . . . . . 400 Hz




### UKW-ZF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf UKW stellen.
3. Das Radio auf einen Punkt ohne Interferenzen abstimmen.
4. **T201** auf maximale Amplitude und symmetrische Kurve einstellen. (Siehe Abb. 1)
5. **T202** auf maximale Amplitude und gute Lineartiät zwischen etwa den ± 100 kHz Marken einstellen. (Siehe Abb. 2)

**HINWEIS:** Vor der Abgleichung den Kern von **T202** ganz in Gegenuhrzeigerrichtung drehen.

Zustand des ZF-Ablenkgenescopes:
Frequenz . . . . . 10.7 MHz

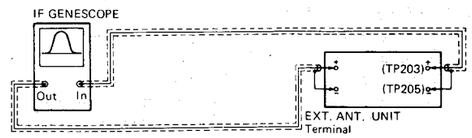



Fig. 1

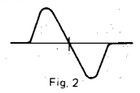


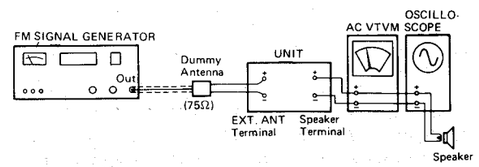
Fig. 2

### UKW-HF-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Gerät auf UKW stellen.
3. Radio und Signalgenerator auf **87,25 MHz** einstellen. **(Die Skalennadel auf die linke Seite der Skala oder untere Frequenzkante stellen.)**
4. **L205** und **L204** für maximalen Ausgang einstellen
5. Radio und Signalgenerator auf **108.40 MHz** einstellen.
6. **CT202** und **CT201** für maximalen Ausgang einstellen. **(Die Skalennadel auf die rechte Seite der Skala oder obere Frequenzkante stellen.)**
7. Schritte 3. ~ 6. wiederholen.

**HINWEIS:** Alle drei Ausgang-Anzeigen sind vorhanden, die Einstellungen müssen mit der Mittenfrequenz erfolgen.

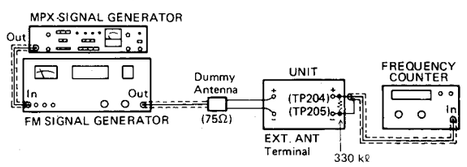
Zustand des Generators:
Modulation . . . . . 30%
Modulation Frequenz . . . . . 400 Hz




### UKW-STEREO-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Den UKW-Betriebsart-Wahlschalter in die FM AUTO position stellen.
3. Radio und Signalgenerator auf **98 MHz** einstellen.
4. **VR201** auf **38 kHz** ± **100 Hz** auf Frequenzzähler einstellen.
5. Einen Stereosenden einstellen und überprüfen, daß die Frequenz bei 38 kHz bleibt.

Zustand des Generators:
Modulation . . . . . 0%
Modulation Frequenz . . . . . 0 Hz
Modulationsrate des 19 kHz Pilotsignals . . . . . 9%



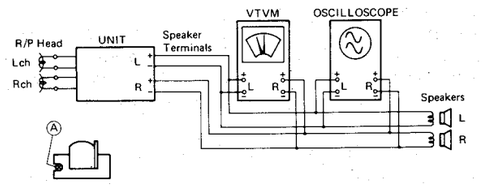


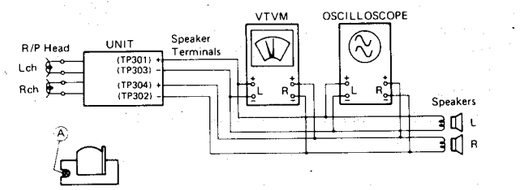

# MESSUNGEN UND EINSTELLUNGEN

■ **Tonband**

### KOPFAZIMUTH-ABGLEICHUNG

1. Testausrüstung wie gezeigt anschließen.
2. Wiedergabe-Testband QZZCAC. (10 kHz, –20 dB).
3. Schraube (A) für maximale Anzeige für gleichen Ausgang auf beiden Kanälen einstellen.
4. Nach der Abgleichung die Kopfeinstellschraube (A) mit Farbe siegeln.




### AUFNAHMEVORMAGNETISIERUNG-ABGLEICHUNG

1. Testausrüstung wiegezeigt anschließen.
2. Das Gerät auf TAPE stellen.
3. Cassettendeck auf Aufnahme stellen.
4. **VR401** für **4.1 mV** ±**0.3 mV** auf Röhrenvoltmeter einstellen.